Liquid Chromatography and Fraction Collection User's Guide

TRILUTION™ LC

GILSON

Liquid Chromatography and Fraction Collection User's Guide

Version 1.3

World Headquarters
Gilson, Inc.
3000 Parmenter Street
P.O. Box 620027
Middleton, WI 53562-0027 USA
Telephone: 608-836-1551 Fax: 608-831-4451

www.gilson.com
sales@gilson.com, service@gilson.com, training@gilson.com

Gilson S.A.S.
19, avenue des Entrepreneurs
F-95400 VILLIERS LE BEL France

©2006 Gilson, Inc. All rights reserved.

LT350009-04

Table of Contents

About the User's Guide

Glossary

1 TRILUTION™ LC Software Overview

Unpacking TRILUTION LC 1-2

Customer Service 1-3
- Before Calling Us 1-3

Training 1-4
- Quick Start Tutorial 1-4
- Introduction to TRILUTION™ LC Software for Preparative HPLC (#TRLCTRILUTION1—2 days) 1-5
- Advanced TRILUTION™ LC Software for Custom Preparative HPLC (#TRLCTRILUTION2—1 day) 1-6

Launching TRILUTION LC 1-7
- Windows® 2000 1-7
- Windows® XP 1-8
- Both Operating Systems 1-9

Help 1-10

TRILUTION LC Menus 1-11
- Liquid Chromatography and Fraction Collection Menu 1-11
- Administrative Tools 1-26
- User Setting 1-27
- Change Password 1-27
- Users and Groups 1-28
- Log Off 1-40
- Lock 1-40

Closing TRILUTION LC 1-42

2 Project Library

Project Library Window 2-2
- Action Buttons 2-4
- Filter Buttons 2-5
- Right-Click Menu 2-5

Creating a Project 2-14

Sharing a Project 2-17

Modifying a Project 2-18
- Changing Description 2-18
- Adding Applications 2-18
- Removing Applications 2-19

Exporting 2-20
Exporting Projects..... 2-20
Exporting Applications 2-22
Importing 2-24
Importing Projects..... 2-24
Importing Applications 2-26
Deleting Projects 2-28
Viewing Results 2-29

3 Working with Tasks

Creating a Task 3-3
Commands 3-3
Operators 3-4
Nesting Tasks 3-5
Viewing a Task 3-9
List View 3-10
Modifying a Task 3-11
Exporting a Task.....3-14
Importing a Task 3-17
Deleting a Task 3-19
Closing 3-20
Close the Open Task 3-20
Close All Open Tasks 3-20
Close the Task Builder 3-20

4 Method Builder - Configuration

Configuration Tab Window 4-2
Configured Instrument Panel..... 4-4
Instrument Types 4-5
Available Instruments 4-5
Workspace 4-5
Properties 4-5
Creating a Configuration 4-6
Instrument Properties..... 4-9
Compressibility 4-115
Calculating Fraction Collection Delay Volume..... 4-119
Modifying a Configuration 4-122

5 Method Builder - Bed Layout

Bed Layout Tab Window 5-2
- Configured Instrument Panel 5-3
- Zone Management 5-4
- Numbering Pattern 5-4
- Workspace 5-4

Creating a New Bed Layout 5-5

Modifying a Bed Layout 5-8

Deleting a Bed Layout 5-10

6 Creating a Method

Method Builder 6-3
- Action Buttons 6-3
- Configuration Tab 6-4
- Bed Layout Tab 6-4
- Analysis Tab 6-5
- Control Tab 6-5

Mobile Phase Tasks 6-20
- Gradient Task 6-20
- Gradient Task with Variables 6-20
- Isocratic 6-22
- Linear Gradient with Column Wash Out 6-23
- Linear Gradient with No Column Wash Out 6-24
- Multi Linear Gradient with Step and Column Wash Out 6-25
- Multiple Linear Gradient with Column Wash Out 6-26

Auxiliary Tasks 6-27
- Sync Task 6-27
- Conditional Fraction Collection 6-29

Scheduling Timed Tasks 6-36
- Deleting Task from Control 6-36
- Modifying Task Time and/or Properties 6-37
- Modifying Task 6-37

Gradients 6-38
- Adding a Mobile Phase Event 6-38
- Modifying a Mobile Phase Event 6-39
- Deleting a Mobile Phase Event 6-41

Variables 6-42

Save and Close Method 6-44

Exit the Method Builder 6-45

7 Method Builder - Analysis

Configured Instrument Panel 7-2

Creating an Analysis 7-3

Peak Integration Tab 7-4

Setting Analysis Conditions 7-5
- Integration Tasks 7-6
- Sensitivity Calculator 7-26
- Peak Width 7-26
- Application Run Results 7-26
- Peak Table 7-27
- Graph Pane 7-31
- Background Removal 7-32
- Calibration 7-32
- Track Retention Times 7-34
- Custom Calculation 7-35

Report Tab 7-45
- Report Template 7-45
- Include All 7-45
- Report Column Format 7-47
- Analysis Report Elements 7-58
- Calibration Report Elements 7-60
- Auto Action 7-62
- Data Channel Settings 7-63
- Company Logo & Address 7-64

List View 7-65

Retention Time Windows 7-66
- Setting Time Window Parameters 7-67
- Resolving Overlapping Windows 7-70

Using the Peak Table During Data Analysis . 7-72
- Reasons for Missing Peaks 7-72
- Locating Reference Peaks 7-73
- Locating Non-Reference Peaks 7-74
- Updating Peak Retention Times 7-75

Error Handling Tab 7-77
- Set Up Analysis Error Handling 7-77

Variables 7-80

Deleting an Analysis 7-82

8 Running an Application

Application Run Window 8-2
Title Bar 8-3
Application Run Toolbar 8-3
Sample List Toolbar 8-4
Run Name 8-5
Configuration Toolbar 8-6
Graph Toolbar 8-6
Action Buttons 8-10
Chromatogram 8-11
Status Box 8-12
Run Time 8-12
Info Window 8-12

Setting Up a Sample List 8-13
Default Columns 8-15
Additional Columns 8-20
Inserting Sample Between Samples 8-20
Adding Sample 8-20
Generating Multiple Samples 8-21
Deleting Sample 8-21
Clearing Sample 8-21
Specifying a Shutdown 8-22
Using the Bed Layout to Generate the Sample List 8-22
Setting Up Sample List for Fraction Collection 8-23
Re-injecting Collected Fractions 8-25
Exporting a Sample List 8-27
Importing a Sample List 8-28

Reviewing Where Run-Generated Information is Stored 8-29

9 Starting a Run

Starting a Run 9-2

During the Run 9-3
Status Box 9-3
Sample List 9-3
Chromatogram Pane 9-4

Interrupting a Run 9-5
Pause Run 9-5
Stop Run 9-6
Emergency Stop 9-6

Resuming a Run after Termination 9-7

After the Run 9-8
Status of TRILUTION LC 9-8
Shutting Down the HPLC System 9-8
Viewing Log File 9-9

10 Manual HPLC System Control

Manual Control Window 10-2
- Manual Control Toolbar 10-3
- Configuration 10-4
- Strip Chart Toolbar 10-4
- Action Buttons 10-8
- Chart 10-8
- Info Window 10-8

Control of Mobile Phase Pumps 10-9
- Controlling the Pumps 10-9

Strip Chart Control 10-10

Manually Sending Commands to Instruments 10-11
- Reorder Commands 10-11
- Remove Commands 10-12

Data Storage 10-13

11 Re-Analysis Processing

Chromatogram 11-4

Manual Baseline Adjustment 11-5

Executing the Re-analysis 11-7

12 Results

Application Run Result Window 12-2
- Result 12-3
- Summary 12-5
- Calibration..... 12-6

Exporting a Run 12-7

Archiving a Run 12-8

Restoring a Run 12-10

Run Result Window 12-11
- Graph Pane 12-11
- Viewing Results 12-17
- Analysis Report 12-18

Analyzing Data or Analyzing it in a Different Way 12-19

13 Calibrations

Application Run Result Window 13-3
Result 13-3
Summary 13-5
Calibration 13-5
Calibration Window 13-7
Graph Pane 13-7
Viewing Calibrations 13-9
Calibration Report 13-10
Recalibration and Re-analysis 13-11
Exporting a Calibration 13-12
Archiving a Calibration 13-13
Restoring a Calibration 13-14

14 Working with Expressions, Variables, and Operators

Variables 14-2
Variable Types 14-4
Task Variables 14-4
Method Variables 14-6
Operators 14-8
Branching Operators 14-8
Conditional Operators 14-11
Unconditional Operators 14-18
Expressions 14-23

15 Generating Reports

The Reports Window 15-2
Reports Overview 15-3
Task Report 15-6
Run Report 15-8
Project Report 15-10
Method Report 15-12
Sample Tracking Report 15-14
Analysis Report 15-15
Summary Report 15-17
Calibration Report 15-19
View a Report 15-21
Viewing Toolbar 15-21
Export a Report 15-22

A List of Tasks

151 and 152 Detector Tasks A-4

155 and 156 Detector Tasks A-16

202C Fraction Collector Tasks A-22

FC 203B, FC 204, 206, and
PREPFC Fraction Collectors Tasks A-24

819 Injection Module Tasks A-46

845Z Injection Module Tasks A-72

215 Liquid Handler and
215 Liquid Handler without Pump Tasks ... A-93

231/232 XL Sample Injectors Tasks A-176

233 XL Sample Injector Tasks A-203

234 Autoinjector Tasks A-216

235 Autoinjector Tasks A-236

GX-281 Liquid Handler Tasks A-272

305 and 307 Pump Tasks A-455

306 Pump Tasks A-456

321 HPLC Pump Tasks A-457

322 HPLC Pump Tasks A-459

331/333 Prep-Scale HPLC Pump Tasks A-460

332/334 Prep-Scale HPLC Pump Tasks A-461

VALVEMATE™ Tasks A-462

402 Pump Single and
402 Pump Dual Tasks A-464

506C System Interface Tasks A-465

Auxiliary Tasks A-468

B Rinse Locations

215 Liquid Handler B-2

GX-281 Liquid Handler B-4

C List of Commands

Data Channel Commands C-2

Detector Commands C-5

Fraction Collector Commands C-30

Injector Commands C-57

Liquid Handling Commands C-60

Mobile Phase Commands C-88

Switching Valve Commands C-93

System Commands C-96

System Interface Commands C-106

D Bed Layout Utility

Creating Custom Templates D-2
Creating a Template D-3
Deleting a Template D-9
Creating Custom Rack Elements D-10
Creating a Rack D-11
Adding the Elements D-12
Editing a Custom Element D-18
Deleting an Element D-18
Deleting a Rack D-19
Exporting a Bed Layout D-20
Importing a Bed Layout D-22
Closing the Bed Layout Utility D-24

E Open Access

TRILUTION LC Open Access E-2
Enable Open Access for Applications E-2
Launch Open Access E-3
Open Access Application Window E-4
Description E-5
Begin the Open Access Wizard E-6
Submission of Sample(s) E-25
Free Wells E-27

F Electronic Record Management (ERM) Features

ERM Administration F-2
User and Groups F-3
Share F-6

G GSIOC Configuration Editor

H GSIOC Utility

Starting the GSIOC Utility H-2
- Reviewing the Port and Baud Information H-2
- Listing GSIOC Instruments H-3

Basic Mode H-4
- Basic Mode Buttons and Features H-5
- Basic Mode Menus H-7

Advanced Mode H-9
- Advanced Mode Buttons and Features H-10
- Advanced Mode Menus H-14

Commands H-21
- Immediate Command H-21
- Buffered Command H-21
- Insert an Immediate Command H-22
- Insert a Buffered Command H-23
- Send an Immediate Command H-24
- Send a Buffered Command H-25

About the User's Guide

This TRILUTION™ LC Software User's Guide is for the users of Gilson instruments. It provides instructions for TRILUTION LC.

The information contained in this document is intended for the laboratory operators or individuals doing research activities.

How to Use TRILUTION LC User's Guide

The chapters are sequenced based on the TRILUTION LC functionality.

The following table lists the material covered in each chapter:

Chapter Name	*Description*
TRILUTION™ LC Software Overview	Provides a TRILUTION LC overview
Project Library	Provides information on using the Project Library
Working with Tasks	Provides information on how to build a Task
Method Builder - Configuration	Provides information on how to select instruments to build a Configuration
Method Builder - Bed Layout	Provides information on how to design a Bed Layout
Creating a Method	Provides information on how to build a Method
Method Builder - Analysis	Provides information on how to specify analysis parameters in a Method
Running an Application	Provides information on how to build an Application
Starting a Run	Provides information on how to simulate and run an Application
Manual HPLC System Control	Provides information on how to send manual commands to an instrument in a Configuration
Re-Analysis Processing	Provides information on how to execute a re-analysis
Results	Provides information on viewing data after a run

Chapter Name	*Description*
Calibrations	Provides information on viewing calibration plots after a run
Working with Expressions, Variables, and Operators	Provides information on how to use Variables, Operators, and build Expressions
Generating Reports	Provides information about viewing and exporting reports
List of Tasks	Provides a list of the tasks available in TRILUTION LC
Rinse Locations	Provides a description of rinse positions
List of Commands	Provides a list of the commands available in TRILUTION LC
Bed Layout Utility	Provides information about building custom racks and templates for use in Bed Layouts
Open Access	Provides a description of how to use the Open Access wizard
Electronic Record Management (ERM) Features	Provides information about the features available in TRILUTION LC to assist chromatographers in attaining 21 CFR Part 11 compliance through the implementation of Electronic Record Management (ERM)
GSIOC Configuration Editor	Provides information about how the GSIOC Configuration Editor enables you to modify COM (serial communications) port and baud rate information
GSIOC Utility	Provides information about how to use the GSIOC Utility to issue commands to Gilson GSIOC instruments

Glossary

Terminology	*Definition*
Application	A file with a set of Methods to execute a set of actions to obtain the experiment results.
Application Run	The act of executing an Application to get desired results.
Back Sensitivity	Sensitivity at half height of peak's descending edge.
Back Slope	Slope at half height of peak's descending edge.
Bed Layout	A file that specifies the location of solutions on the bed, rinse stations, and injection ports.
Command	A Control call representing a single action.
Configuration	A group of selected instruments.
Element	A rack element is a footprint or a well.
Footprint	A placeholder for a Rack.
Front Sensitivity	Sensitivity at half height of peak's ascending edge.
Front Slope	Slope at half height of peak's ascending edge.

Terminology	*Definition*
Handle	A position designated in a rack which makes the rack mobile. Zones cannot be assigned to a handle.
Method	A file with a set of Tasks and a Configuration that performs actions when used in an Application Run.
Origin	Defined by the user, the location of the coordinates X=0, Y=0, Z=0.
Project	A grouping of files used to obtain and analyze experiment results.
Project Library	A collection of Projects and their components.
Property	A Parameter.
Rack	A Rack requires a Footprint before it can be added to a Template. Examples of racks are Racks, Rinse Stations, Injection Port Bars, Tip Boxes, and Microplates.
Switch Syntax	A DOS syntax to get information
Target	A position defined within a well. Zones can be assigned to a target.
Task	A file with a set of Commands and Operators to perform a sequence of actions.
Tray	A placeholder with footprints to hold the Racks.
Well	Wells (specifically custom wells) can only go in Racks.

TRILUTION™ LC Software Overview 1

TRILUTION™ LC Software is software for controlling high-pressure liquid chromatography systems and automated liquid handling instruments. TRILUTION LC provides unsurpassed fraction collection capabilities including conditional logic collection, the ability to add additional fraction collectors for increased bed capacity, intuitive and powerful slope collection parameters, and automatic sample list generation of collected fractions for post collection processing.

TRILUTION LC's flexible, easy-to-use interface features graphical gradient creation and adjustments, click-and-drag icon-based tasks, and graphical method optimization. Parameter and Time variables for universal method creation, in addition to an intuitive sample list, make TRILUTION LC a truly user-friendly software package. Graphical custom task creation and rack creation allow for the flexibility and functionality to meet the most demanding application requirements.

Unpacking TRILUTION LC

Unpack TRILUTION LC upon receipt even if the software will not be used immediately. Many carriers must receive concealed damage claims within seven days of delivery.

Customer Service

Gilson, Inc. and its worldwide network of authorized representatives provide customers with the following assistance: sales, technical support, applications, and instrument repair.

If you need assistance, please contact your Gilson-authorized representative. Specific contact information can be found on the Gilson web site at www.gilson.com.

Before Calling Us

Gilson-authorized representatives will serve you more efficiently if you have the following information (as applicable):

- Serial number and model number of the Gilson instruments involved
- Installation procedures you used
- List of concise symptoms
- List of operating procedures and conditions you were using when the problems arose
- List of other instruments connected to the system and a description of those connections
- List of other electrical connections in the room

Training

Gilson's TRILUTION LC training allows you to fully understand and operate your Gilson HPLC system. Training courses are offered regularly at Gilson, or a customized training course can be brought to your facility. In addition, complimentary training through use of Gilson's Quick Start Tutorial provides you with immediate access to "how to" movies. The following TRILUTION LC training has been developed to specifically meet different experience levels.

Quick Start Tutorial

Let Gilson's Quick Start Tutorial assist you with learning and using TRILUTION™ LC Software. Your purchase of a TRILUTION LC license includes the Quick Start Tutorial on CD-ROM, which automatically loads the tutorial's main menu. Seven TRILUTION LC Software tutorials and an introductory tutorial are available for you to learn how to program TRILUTION LC Software for a Gilson HPLC injection and fraction collection application. The tutorials can be launched in any order by clicking on each selection from the main menu.

Introduction to TRILUTION™ LC Software for Preparative HPLC (#TRLCTRILUTION1—2 days)

Two days of classroom training focused on TRILUTION™ LC Software in a preparative/semi-preparative HPLC environment provides participants with the best learning experience for operating and understanding their Gilson HPLC system. The majority of training time is spent performing applications using and running TRILUTION LC under laboratory conditions with the supplied database tasks. This training course is a complete and necessary introduction to TRILUTION LC for the preparative/ semi-preparative HPLC chemist.

Course Objectives

After attending this course, participants will be able to:

- Create configurations with single and multiple fraction collectors in TRILUTION LC
- Use the Bed Layout Builder to create a tray that locates the positions of samples, reagents, standards, fractions, etc.
- Program and run a variety of methods for fraction collection modes, system startup, shutdown, and error handling
- Understand delay volume, fraction collection, and variables
- Collect and reinject fractions

Advanced TRILUTION™ LC Software for Custom Preparative HPLC (#TRLCTRILUTION2—1 day)

One day of classroom training specifically focused on customization in TRILUTION™ LC Software in a preparative/semi-preparative HPLC environment provides participants with the tools required for creating custom tasks, racks, and calculations for their Gilson HPLC system. The majority of training time is spent programming and running TRILUTION LC customs under laboratory conditions. This one-day training, combined with course #TRLCTRILUTION1, is a complete TRILUTION LC certified training course for the preparative/semi-preparative HPLC chemist.

Course Objectives

After attending this course, participants will be able to:

- Create and understand commands and operators for task building
- Adjust supplied tasks and create new custom tasks
- Create custom racks and elements

For further information on TRILUTION LC training courses or for course registration, please contact Gilson at training@gilson.com. For a comprehensive training calendar of courses available at Gilson, Inc., please visit www.gilson.com.

Launching TRILUTION LC

Windows® 2000

On the Microsoft® Windows® 2000 operating system, do one of the following:

- Click **START** and then select **PROGRAMS>GILSON APPLICATIONS>TRILUTION LC>TRILUTION LC.**
- On the Desktop, double-click the TRILUTION LC icon ( ). The TRILUTION log on window is displayed.

The TRILUTION Log On Window

Windows® XP

On a Windows® XP operating system do one of the following:

- Click **START** and then select **ALL PROGRAMS> GILSON APPLICATIONS>TRILUTION LC> TRILUTION LC**. The TRILUTION log on window is displayed.
- On the Desktop, double-click the TRILUTION LC icon. The TRILUTION log on window is displayed.

Both Operating Systems

In the TRILUTION log on window, do the following:

- In the ***User Name*** field, type your user name.
- In the ***Password*** field, type your password.

  Note: Passwords have a 20-character limit.
- Click **OK**.

The TRILUTION menu is displayed.

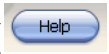
The TRILUTION Menu

On the TRILUTION menu, click **LIQUID CHROMATOGRAPHY AND FRACTION COLLECTION**.

Help

On-line help comes with TRILUTION LC. The on-line help describes the commands and dialogs available in the software and discusses the procedures needed to perform tasks.

You can access the on-line help in the following ways:

- (***Windows® 2000***) Click **START** and then select **PROGRAMS>GILSON APPLICATIONS>TRILUTION LC>TRILUTION LC HELP.**
- (***Windows® XP***) Click **START** and then select **ALL PROGRAMS> GILSON APPLICATIONS>TRILUTION LC> TRILUTION LC HELP.**
- By moving the mouse cursor over a button in TRILUTION LC. A box appears with text that describes what the button does.
- By clicking **HELP** (

) to display help for the dialog.
- By clicking to display help about the window.
- By clicking to display help about the menu.

TRILUTION LC Menus

TRILUTION LC has two main menus: Liquid Chromatography and Fraction Collection Menu and Administrative Tools. These menus are accessed from the TRILUTION menu. Click the Main Menu icon ( ) in the lower right corner of any builder to bring forward the TRILUTION menu. A description of the these menus and submenus follows.

Liquid Chromatography and Fraction Collection Menu

Use the options in this menu to create, organize, and run your application.

Menu	*Described on*
Project Library	page 1-11
Task	page 1-12
Method	page 1-12
Utilities	page 1-13
Reports	page 1-24
About	page 1-25

Project Library

The Project Library is used for managing and organizing projects. Methods can be opened from the Project Library. Applications can be run from the Project Library. Results can be viewed from the Project Library.

Task

A Task is an action to be performed on a specific instrument. It is a combination of Commands and Operators. A Task serves as a building block for a Method. The Task Builder allows you to create, modify, delete, export, and import Tasks.

Method

The Method Builder allows you to specify method conditions for controlling instruments and indicate how collected data is analyzed and reported. Whether the data is analyzed at run time or afterwards, TRILUTION LC uses the information in the analysis method to report on peaks detected in samples.

Utilities

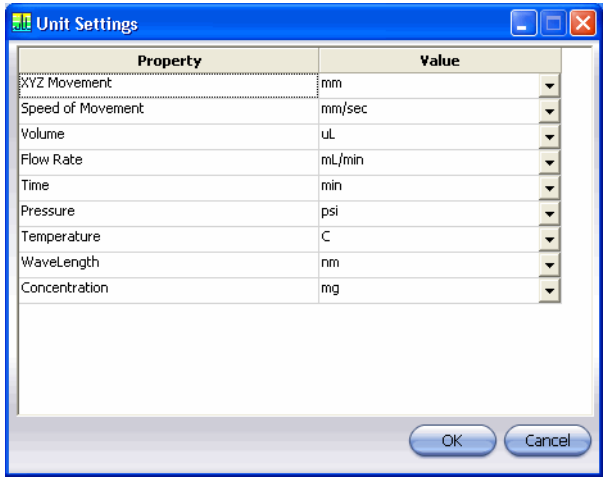
Utilities accesses another menu with options for setting units, creating custom Bed Layouts, purging or recovering deleted items, registering TRILUTION LC, setting notifications, and enabling ERM.

Menu	*Described on*
Unit Settings	page 1-14
Bed Layout	page 1-16
Purge and Recover	page 1-17
Register	page 1-19
Notification	page 1-20
ERM	page 1-22

Back

Click the Back button ( ) to return to the main menu.

Unit Settings

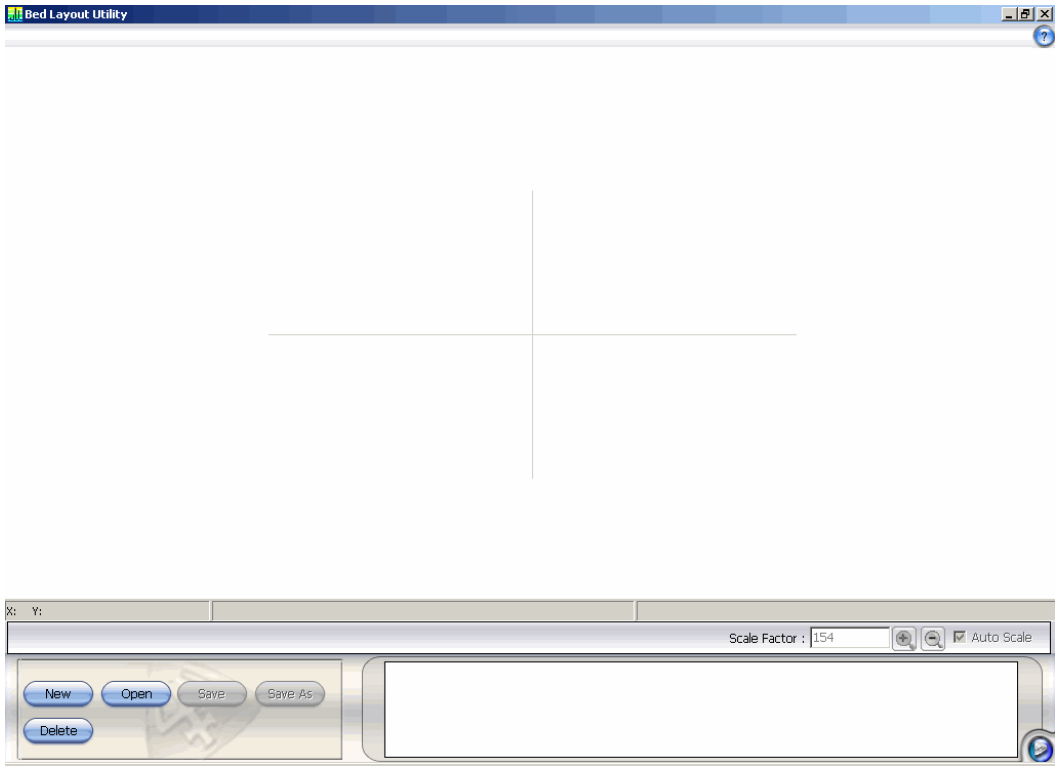


The Unit Settings Window

This option, only available to members of the default Admin group, allows you to set the units of measurement for the Commands and Tasks and elsewhere in the software. The unit types are listed in the following table.

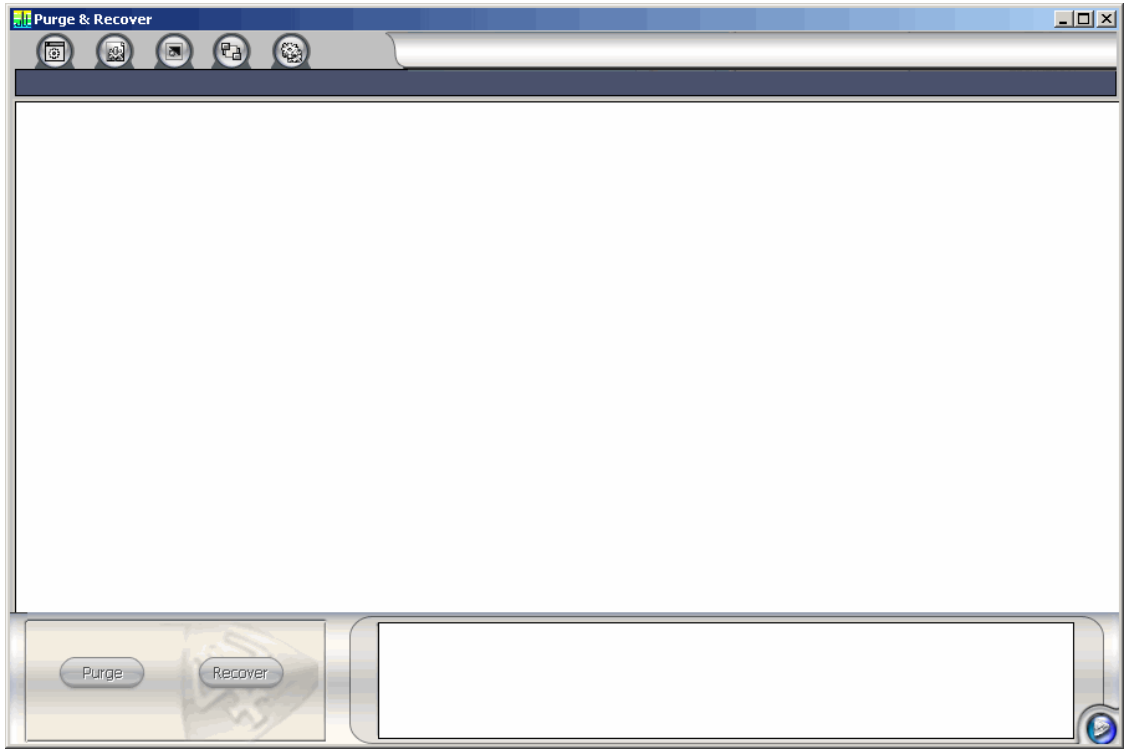
Unit Type	*Units of Measurement*
XYZ Movement	mm, cm
Speed of Movement	cm/sec, mm/hr, mm/min, mm/sec
Volume	mL, nL, µL
Flow Rate	mL/hr, mL/min, mL/sec, µL/min, µL/sec
Time	hrs/min/sec
Pressure	psi, MPa, Bar
Temperature	C, F, K
WaveLength	nm
Concentration	mg, µg

Bed Layout



Use this utility to create custom templates and racks.

Purge and Recover

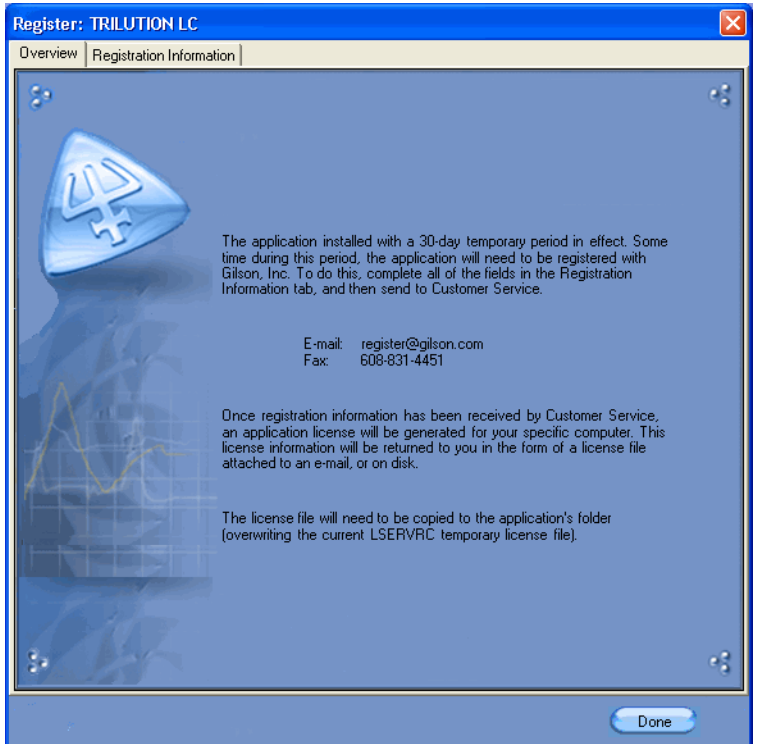


The Purge and Recover utility window

Use the Purge and Recover Utility window to permanently delete the files from the database and/or restore the deleted files back to the Project Library. It has the following buttons in the action bar:

- **PURGE**: Permanently deletes the files from the database. Purged files cannot be recovered.
- **RECOVER**: Restores Applications and Methods back to their respective palettes in the Project Library, Tasks to the Tasks palette in the Task Builder, and Components (Configurations, Bed Layouts, etc.) back to the Project Library, if not deleted from the database.

Register


Register: TRILUTION LC
Overview
Registration Information
The application installed with a 30-day temporary period in effect. Some time during this period, the application will need to be registered with Gilson, Inc. To do this, complete all of the fields in the Registration Information tab, and then send to Customer Service.
E-mail: register@gilson.com
Fax: 608-831-4451
Once registration information has been received by Customer Service, an application license will be generated for your specific computer. This license information will be returned to you in the form of a license file attached to an e-mail, or on disk.
The license file will need to be copied to the application's folder (overwriting the current LSERVRC temporary license file).
Done

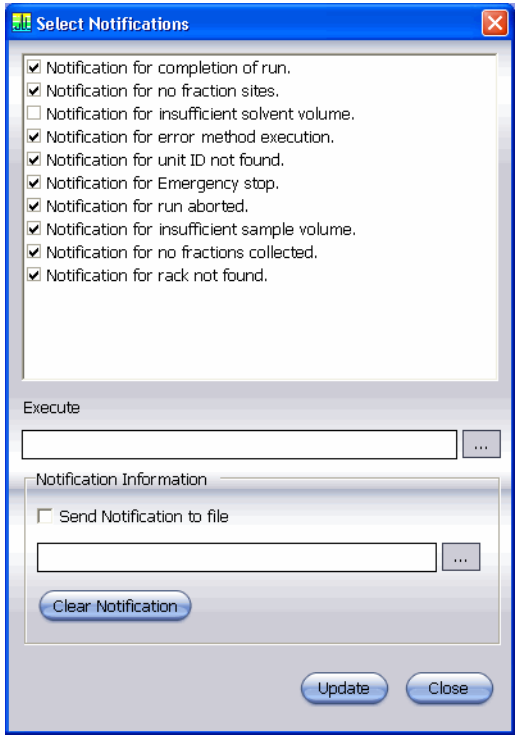
The Registration Overview window

The Registration menu allows you to register for a licensed version of TRILUTION LC. Two tabs are available:

Overview: Explains the registration process.

Registration Information: This is where the user information is entered.

Notification



The Notification menu allows you to launch a file if a specified condition occurs. Those conditions are:

- Run complete
- No fraction sites available
- Insufficient solvent volume available
- Error method executed
- Unit ID not found

- Emergency Stop activated
- Run aborted
- Insufficient sample volume available
- No fractions collected
- Rack not found

Execute

The format required to launch the file is the complete path and then a hyphen and then any arguments.

Notification Information

You can optionally send the notification message to a text file.

On the Browse for Folder window, select a folder and click **OK**. On completion of the run, the notifications are saved in the specified folder with an .LCNT extension.

Clear Notification

Click to delete the notification message text files from the specified path folder.

ERM

The implementation of an electronic record management system can be complex. TRILUTION LC can assist chromatographers in attaining 21 CFR Part 11 compliance through the implementation of Electronic Record Management (ERM). The ERM features allow electronic records security and tracking (audit trails), electronic signatures, and method versioning of records, as well as permitting customized user access levels within the software.

This menu, accessible only to members of the default Admin group, provides options for electronic record management.

ERM Features

This menu is accessed from the ERM menu by a member of the default Admin group. ERM is enabled from this menu by selecting the Enable ERM Features check box. TRILUTION LC defaults with this box cleared (ERM features disabled).

TRILUTION LC provides for the option to enable signature points each time a component is saved. Enable this option by first selecting to Enable ERM Features and then select the Enable Signature Points check box. Enable Signature Points defaults cleared (no signatures required when saving).

Audit Trail

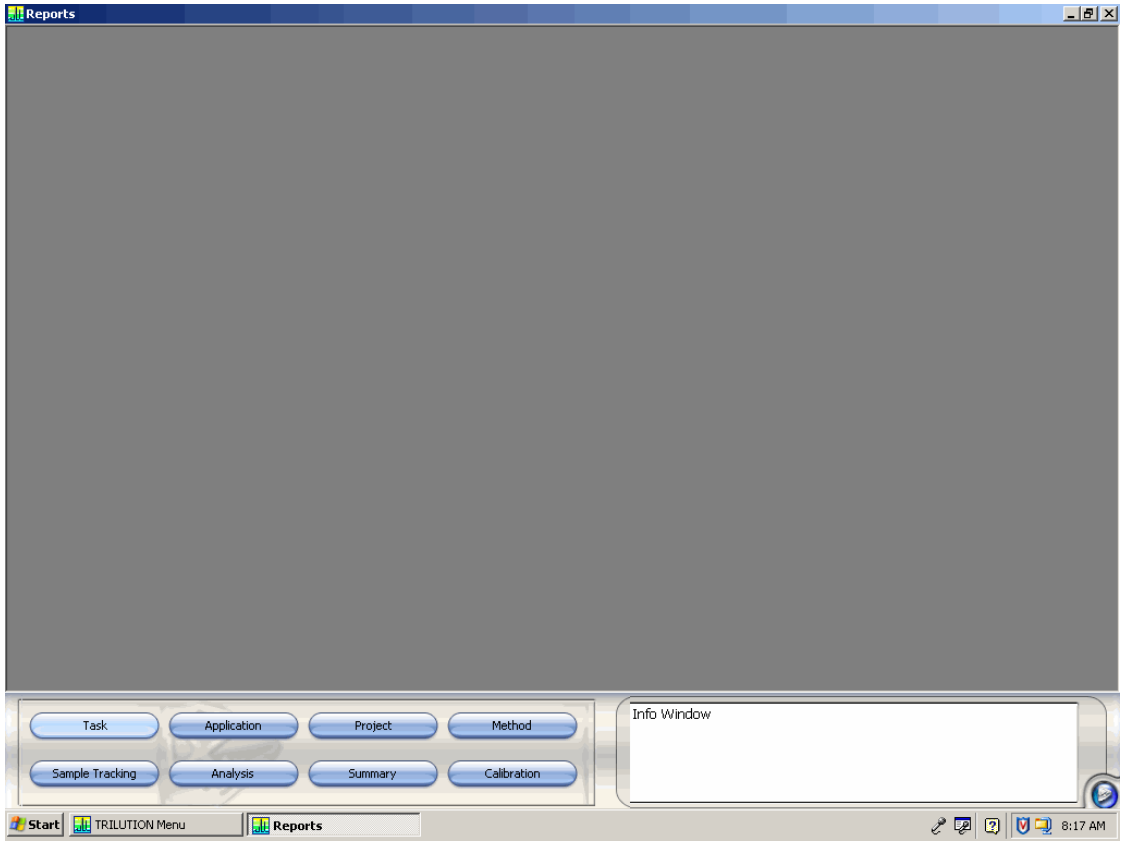
This menu is accessed from the ERM menu by a member of the default Admin group. The Audit Trail dialog offers three options: Audit Trail, Event Log, and E-Signature.

Event Log records the click of any action button in all builders. This log is maintained whether or not ERM features are enabled.

Audit Trail records the details of changes made in any of the builders prior to a save. Double-click the event in the Audit Trail to display the details of the changes or click **PREVIEW** to view the information in a report format.

E-Signature records the details (including comments entered) of each e-signature prior to a save.

Reports



The Reports window

This menu allows you to generate the following report types: Task, Run, Project, Method, Sample Tracking, Analysis, Summary (Unknown or Standard), and Calibration.

About

The About window

This window displays the license information.

Administrative Tools

The Administrative Tools menu

The **ADMINISTRATIVE TOOLS** menu allows you to create Users and Groups and change passwords. The following are the menu options:

- **User Setting:** Allows you to choose whether or not TRILUTION LC should remember your user name when logging on.
- **Change Password**: Allows you to change passwords. See **To change the Password** on page 1-27.
- **Users and Groups**: Allows you to create and modify Users and Groups. See **Users and Groups** on page 1-28.

User Setting

If you want TRILUTION LC to remember your user name every time you log on, access the **USER SETTING** option in the **ADMINISTRATIVE TOOLS** menu. The default setting is cleared (TRILUTION LC will not remember your user name).

Change Password

A member of the default Admin group provides the user name and the default password. You can log on to TRILUTION LC and change your password from the **ADMINISTRATIVE TOOLS** menu.

To change the Password

1 On the TRILUTION menu, click **ADMINISTRATIVE TOOLS**.

2 On the **ADMINISTRATIVE TOOLS** menu, select **CHANGE PASSWORD** option. The Change Password window is displayed.

The Change Password window

3 On the Change Password window, do the following:

a) In the ***User Name*** field, verify your user name.

b) In the ***Old Password*** field, type your old password.

c) In the ***New Password*** field, type a new password.

d) In the ***Confirm Password*** field, type the new password again.

e) Click **OK**. The password is changed.

	Password is case sensitive and has a 20-character limit.

Users and Groups

A User is an end user of the product. Every User is assigned to a Group based on their roles. A Group includes Users with common rights.

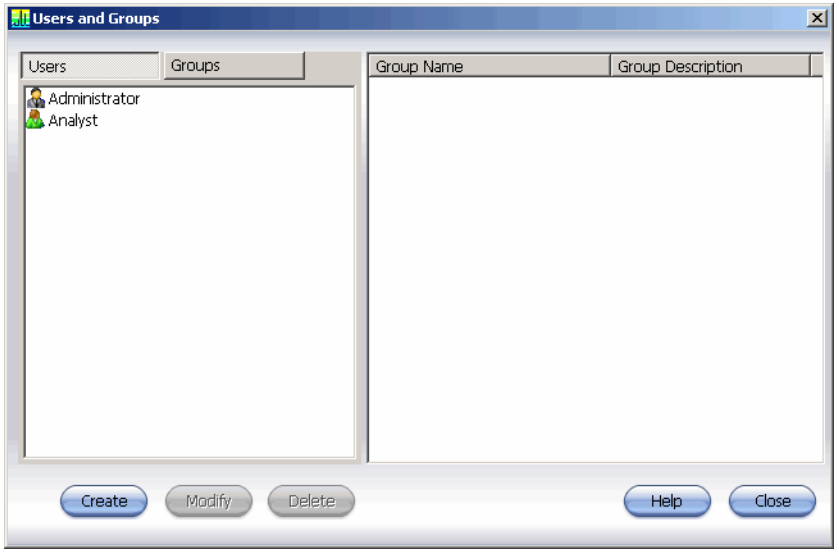
The Users and Groups menu allows you to create, modify, delete, and view Users and Groups.

During the TRILUTION LC installation, by default, two groups are created: Admin and Analyst. “Administrator” is the default user in the Admin group. The Admin group is assigned all the rights. “Analyst” is the default user in the Analyst group. The Analyst group can view, create and modify in TRILUTION LC.

To open the Users And Groups

1 On the TRILUTION menu, click **ADMINISTRATIVE TOOLS**.

2 On the **ADMINISTRATIVE TOOLS** menu, select **USERS AND GROUPS** option.
The Users and Groups window is displayed.



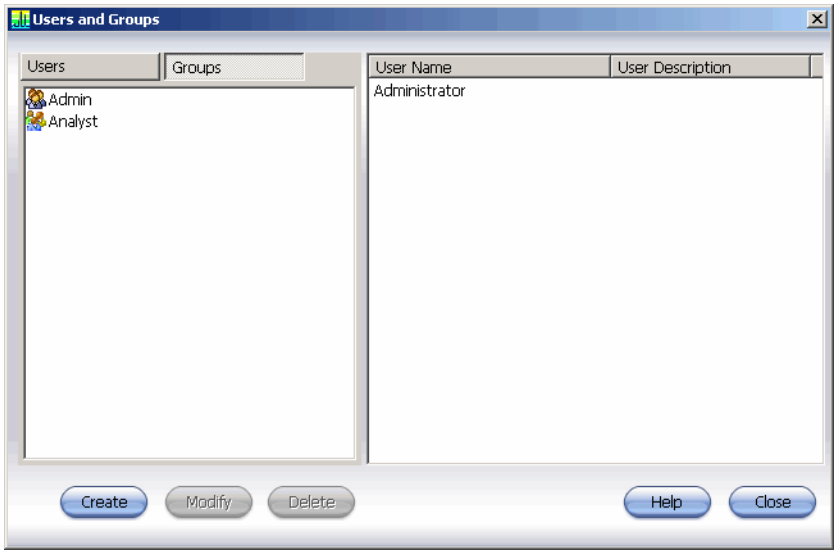
The Users and Groups window

The Users and Groups window has two frames:

- The left frame provides two sections:
  a) **Users**: Allows you to create and modify Users.
  b) **Groups**: Allows you to create and modify Groups.
- The right frame displays the information based on the Tab selected:
  a) On selecting the Users tab, the Group Name and the Group Description are displayed.
  b) On selecting the Groups tab, the User Name and the User Description are displayed.

Only as a member of the Admin group can you create, modify, or delete Users and Groups.

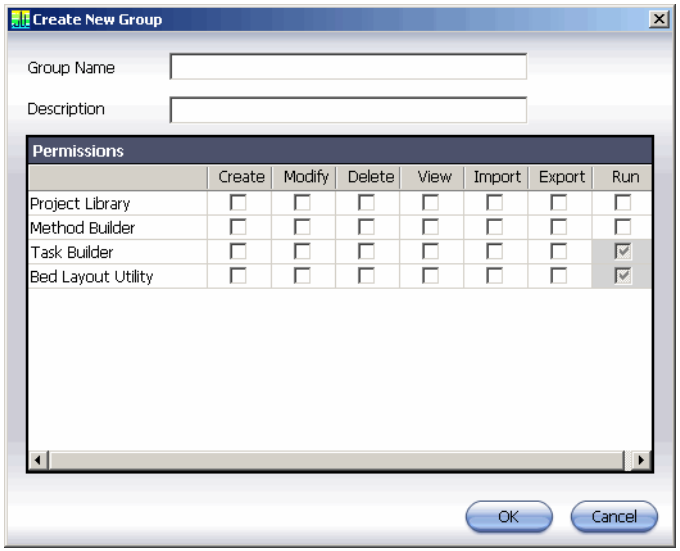
Groups



The Groups tab

A Group comprises Users with common roles. Each role is assigned rights.

The Groups tab lists all the available Groups. You can create, modify, and delete Groups. On selecting a Group from the group tab, the Users belonging to that Group are displayed in the right frame.



To create a Group

1 On the Users and Groups window, click **GROUPS** tab. The name of the default Groups 'Admin' and 'Analyst' are displayed in the left frame.

2 Click **CREATE** to create a new Group. The Create New Group window is displayed.

3 In the Create New Group window, do the following:

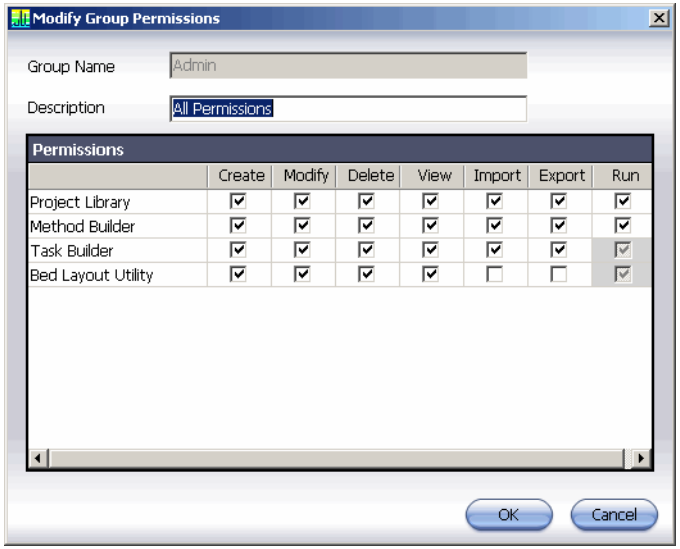
a) In the ***Group Name*** field, type a new Group Name.

b) In the ***Description*** field (optional), type a brief Group description.

c) In the ***Permissions*** frame, select the permissions for the various areas in the software.

d) Click **OK**.

The new Group is created and is listed on the Groups tab.



To modify a Group

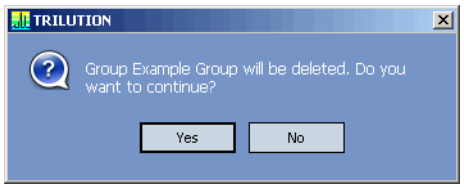
1 On the Users and Groups window, select a Group from the Group tab. The Users belonging to that Group are displayed in the right frame and the **MODIFY** button is enabled.

2 Click **MODIFY**. The Modify Group Permissions window is displayed.

3 In the Modify Group Permissions window, make the required changes and then click **OK**.

To delete a Group

1 In the **GROUPS** tab, select a Group and then click **DELETE**. A delete confirmation dialog box is displayed.



A delete confirmation dialog box

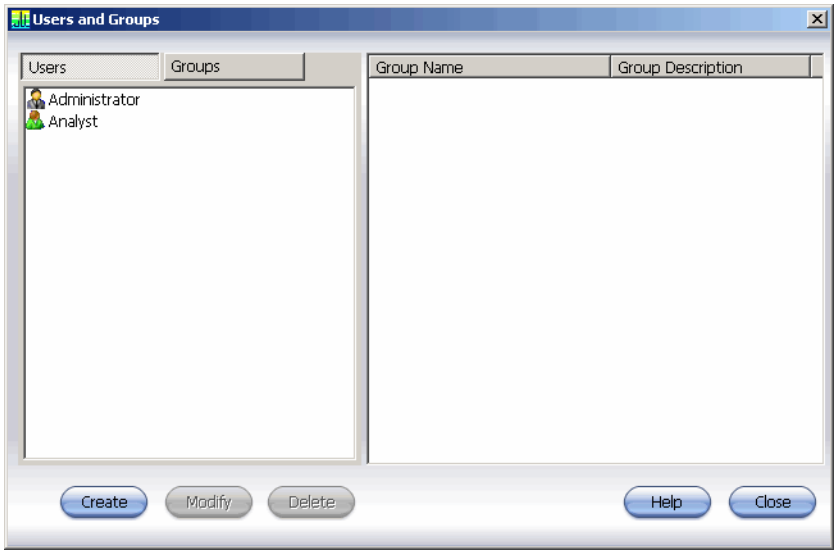
2 Click **YES**.

The selected Group is deleted.

Users belonging to a deleted Group cannot log on to TRILUTION LC.

The Admin group cannot be deleted.

Users



The Users tab

The Users are assigned to Groups based on the roles defined.

For Example,

- Operator
- Administrator
- Scientist

The Users tab lists all the available Users. You can create, modify, and delete Users. You can assign users to one or more of the available groups.

To create a new User

1 On the Users and Groups window, click **USERS** tab. The default user names 'Administrator' and 'Analyst' are displayed in the Users tab with the Group name in the right window.

2 Click **CREATE**. The Create New User window is displayed with two tabs:

- **USER INFO**: Allows you to specify User information.
- **MEMBER OF**: Allows you to assign the User to a Group.

3 On the Create New User window, do the following:

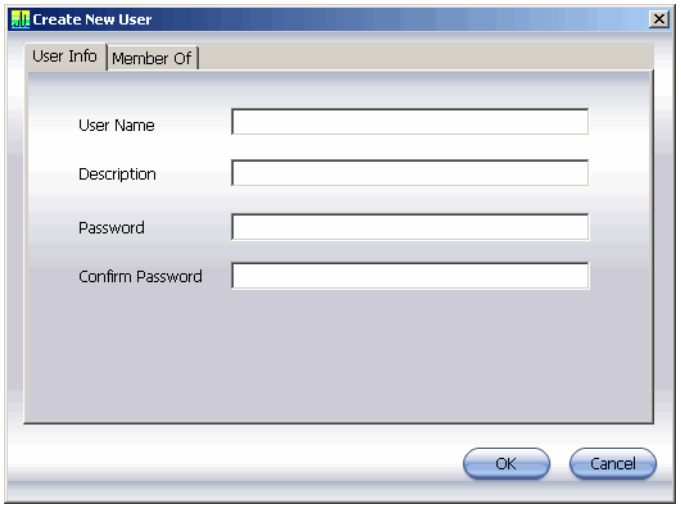
a) Click **USER INFO** and do the following:

1) In the ***User Name*** field, type a User name.

2) In the ***Description*** field (optional), type a brief description of the User.

3) In the ***Password*** field, type your password.

4) In the ***Confirm Password*** field, type your password for confirmation.



User name should be unique.

b) Click **MEMBER OF** and do the following:

1) Click **ADD.**

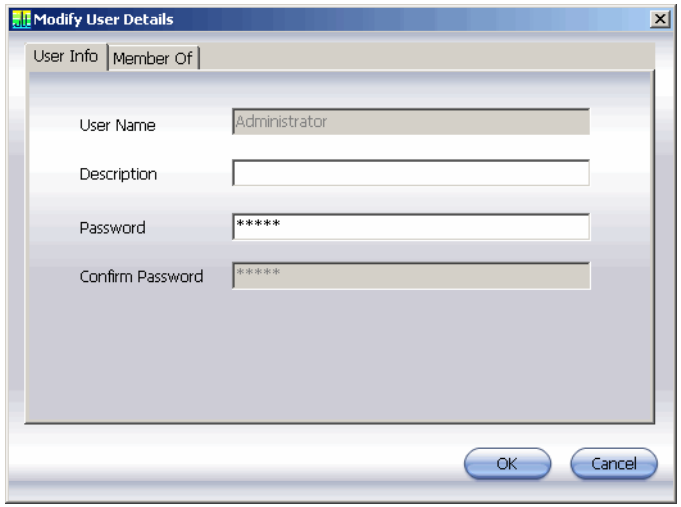
2) Select a group name from the Groups list.

3) Click **OK**.

If no Groups are available, add a new group.

4 Click **OK**.

To modify a User Properties



1 In the **USER** tab, select a User. The Group name and its description to which the User belongs to is displayed in the right frame.

2 Click **MODIFY**. The Modify User Details window is displayed.

3 In the Modify User Details window, you can do the following:

a) In the ***Description*** field (optional), change the description.

b) In the ***Password*** field, provide a new password.

The password for the default user, Analyst, is `Analyst`.

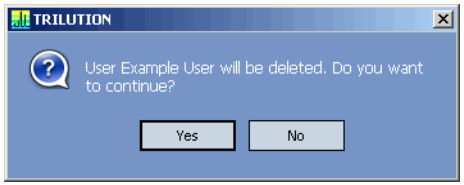
c) In the ***Confirm Password*** field, type your password for confirmation.

d) Click **OK**. The changes are saved to the User details.

A User name cannot be modified.

To delete a User

1 In the **USERS** tab, select a User and click **DELETE**. A delete confirmation dialog box is displayed.



A Delete Confirmation

2 Click **YES**.

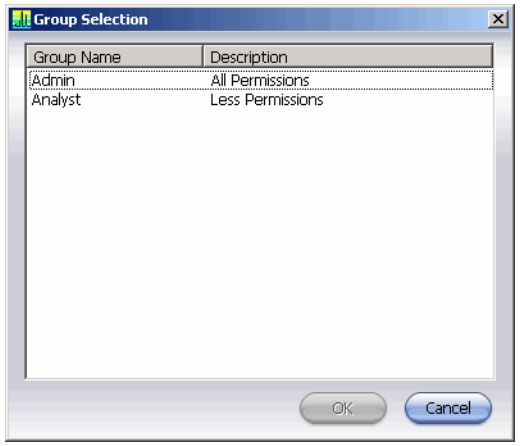
The selected User is deleted.

To assign a User to a Group

1 On the Create New User window, click **MEMBER OF** tab. The available Groups are listed in the **MEMBER OF** window.

2 On the **MEMBER OF** tab, do the following:

a) Click **ADD**. The Group Selection window lists the Groups with their descriptions.



The Group Selection window

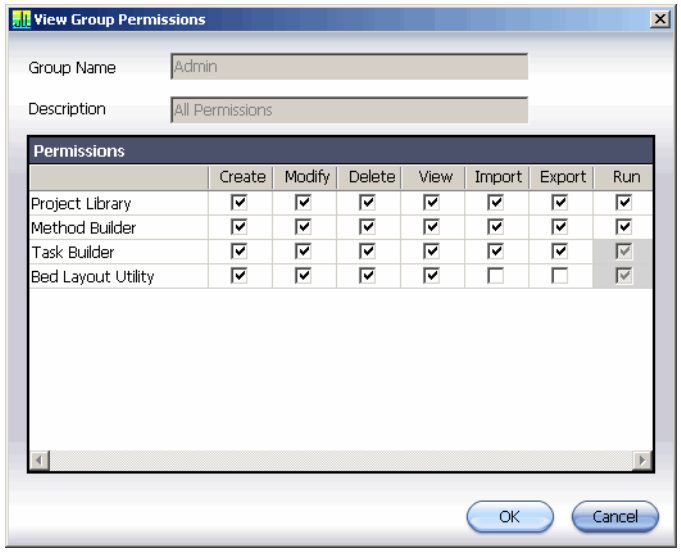
b) On the Group Selection window, select a Group and then click **OK**. The selected Group is added to the **MEMBER OF** tab.

	You can remove a Group from the MEMBER OF tab.

To view the Group permissions

1 On the **USERS** tab, select a User and then click **MODIFY**.

2 On the **MEMBER OF** tab, click **VIEW RIGHTS**. The View Group Permissions window displays a combination of the permissions of all the Groups listed.



The View Group Permissions window

3 On the View Group Permissions window, you can view the following:

a) In the ***Group Name*** field, the Group Name.

b) In the ***Description*** field (optional), a brief description of the Group.

c) In the ***Permissions*** table, the rights assigned to the group for the builders.

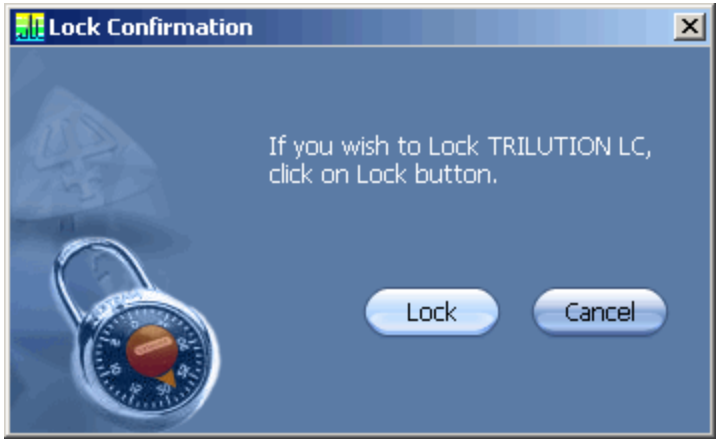
4 Click **OK**.

Log Off

This option ends the current user's session and allows a different user to log on to TRILUTION LC.

Lock

The Lock option allows you to manually lock out the system. All open, unsaved Tasks or Methods will remain open. Only that user or a member of the default Admin group can log on after a lockout.



The Lock Confirmation window

To lock TRILUTION LC operations

1 On the TRILUTION Menu, click the Lock button ( ). The Lock Confirmation window is displayed.

2 On the Lock Confirmation window, click **LOCK**. The Unlock TRILUTION LC window is displayed.

The Unlock TRILUTION LC window

To unlock TRILUTION LC operations

On the Unlock TRILUTION LC window, in the ***Password*** field, type the password.

Closing TRILUTION LC

To close TRILUTION LC

Click on the TRILUTION menu.

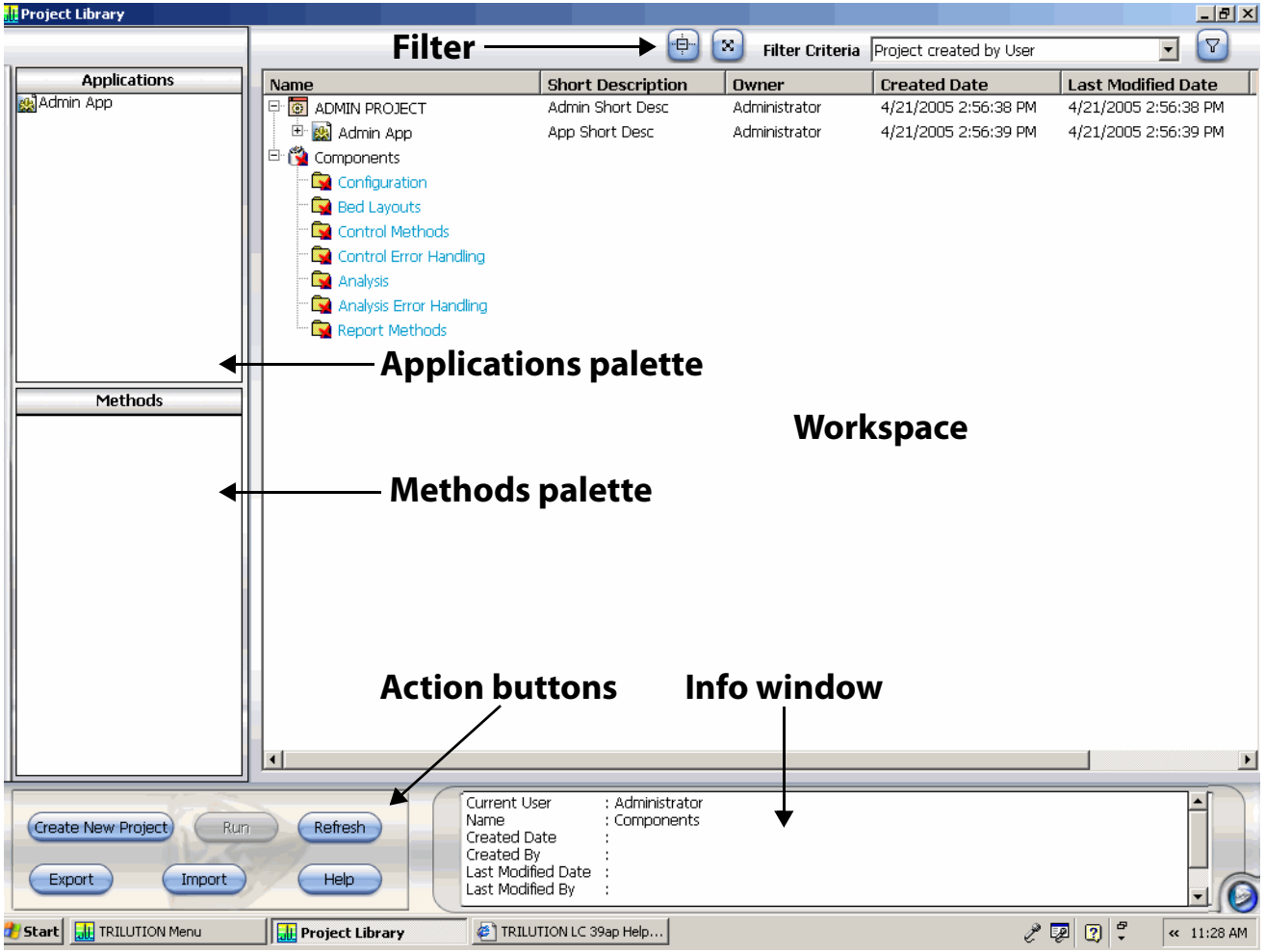
Project Library 2

The Project Library is used for managing and organizing projects.

From the Project Library, you can:

- open Methods
- run Applications
- view Results

Project Library Window



The Project Library Window

Project Library 2

The Project Library serves as an organized, structured way to save and group Applications and Methods. It has the following sections:

- **Applications palette:** Lists the available Applications.
- **Methods palette:** Lists the available Methods.
- **Filter Criteria:** Lists the Projects based on the filter selected:
  - **Project created by User:** Displays only the Projects that the Current User has created.
  - **All Projects for which User has access:** Displays only the projects that have been created by or shared with the Current User. The exception is when the Current User is a member of the default Admin group. Those users see all Projects created by all users.
- **Workspace:** Forms the area to manage and organize Projects.
- **Info Window:** Displays Current User, Name, Created Date, Created By, Last Modified Date, Last Modified By, Short Description, and Long Description.

Action Buttons

The following action buttons are located in the lower left corner of the Project Library.

Action Button	*Description*
CREATE NEW PROJECT	Create a new Project.
EXPORT	Exports a Project to a specified location as a .LCPE file or exports an Application to a specified location as a .LCAE file.
IMPORT	Imports a .LCAE file and lists the Application in the Applications palette in the Project Library or imports a .LCPE file and displays the Project in the Project Library workspace. Imported components will not display until the window is refreshed.
REFRESH	Reloads the palettes with any new Applications or Methods created or imported.
RUN	Runs the selected Application. For more information, refer to ***Chapter 8, Running an Application***.

Filter Buttons

The following buttons can be used when filtering.

Action Button	*Description*
	Collapses the view to show just Projects and the Components branch.
	Expands the view to display all Projects, Applications, Methods, and individual Components.
	Displays the Advanced Filter dialog in which Projects can be filtered by created date or modified date within a specified date range.

Right-Click Menu

TRILUTION LC employs the use of right-click options throughout the software. A description of the right-click options for each Project Library component follows.

Project

Right-click on a Project icon ( ) to display the following menu options.

Menu	*Description*
CHANGE DESCRIPTION	Modify the short and/or long description for the Project.
PASTE	Adds the Application from the Clipboard to the Project. When an Application is pasted, a dialog is displayed in which the application can be specified as Universal. If the Application is Universal, it cannot be renamed and any changes to an Application or its results are updated in all copies of that Application. For example, if a Method is removed from the original Application, it will also be removed from the pasted Application. If Make Application Universal is cleared, it is recommended to rename the Application as any updates made to the original Application will not be reflected in the pasted Application.
SAVE AS...	Save an existing Project to a new name. Optionally, type a short and/or long description for the Project.

Menu	*Description*
CREATE APPLICATION...	Create an Application within the Project. Optionally, type a short and/or long description for the Application.
SHARE...	Grants permission to a user and/or group to access or import the Project.
DELETE	Deletes the Project if it does not have dependent Applications.

Application

Right-click on an Application icon ( ) to display the following menu options.

Menu	*Description*
CHANGE DESCRIPTION	Modify the short and/or long description for the Application.
COPY	Copies the Application to the Clipboard.
PASTE	Adds the Method from the Clipboard to the Application.
SAVE AS...	Save an existing Application to a new name. Optionally, type a short and/or long description for the Application.
RUN	Opens the Application Run window.

Menu	*Description*
RESULT	Opens the Application Run Result window.
REMOVE	Removes the Application from the Project and places it in the Applications palette.
DELETE	Deletes the Application if it does have dependent Methods.
CREATE METHOD	Opens the Method Builder to create a Method within the Application.
ENABLE OPEN ACCESS	Allows the Application to be accessible in TRILUTION LC Open Access. Applications enabled for Open Access use the following icon: .
DISABLE OPEN ACCESS	Marks an Open Access Application inaccessible in TRILUTION LC Open Access.
MINIMUM FRACTION SITES	Sets the minimum number of fraction sites required for each injection when the Application is enabled for Open Access.

Method

Right-click on a Method icon ( ) to display the following menu options.

Menu	*Description*
OPEN	Opens the Method in the Method Builder.
COPY	Copies the Method to the Clipboard.
PASTE	Adds a copied component (Configuration, Bed Layout, Control, Control Error, or Analysis) to the Method.
SAVE AS...	Save an existing Method to a new name. Optionally, type a short and/or long description for the Method.
RUN	Opens the Application Run window.
RESULT	Opens the Application Run Result window.
REMOVE	Removes the Method from the Application and places it in the Methods palette.
DELETE	Deletes the Method or all versions of the Method.

Configuration

Right-click on a Configuration icon ( )to display the following menu options.

Menu	*Description*
COPY	Copies the Configuration to the Clipboard.
REMOVE	Removes the Configuration from the Method and places it in Components|Configuration.

Bed Layout

Right-click on a Bed Layout icon ( ) to display the following menu options.

Menu	*Description*
COPY	Copies the Bed Layout to the Clipboard.
REMOVE	Removes the Bed Layout from the Method and places it in Components|Bed Layouts.

Control

Right-click on a Control icon ( ) to display the following menu options.

Menu	*Description*
COPY	Copies the Control to the Clipboard.
REMOVE	Removes the Control from the Method and places it in Components|Control Methods.

Control Error

Right-click on a Control Error icon ( ) to display the following menu options.

Menu	*Description*
COPY	Copies the instrument error handling information to the Clipboard.
REMOVE	Removes the Control Error from the Method and places it in Components|Control Error Handling.

Analysis

Right-click on an Analysis icon ( ) to display the following menu options.

Menu	*Description*
COPY	Copies the Analysis (peak table, for example) information to the Clipboard.
PASTE	Adds a copied component (Analysis-Error, or Analysis-Report) to the Method.
REMOVE	Removes the Analysis from the Method and places it in Components|Analysis.

Analysis-Error

Right-click on an Analysis-Error icon ( ) to display the following menu options.

Menu	*Description*
COPY	Copies the Analysis error handling information to the Clipboard.
REMOVE	Removes the Analysis-Error from the Method and places it in Components|Analysis Error Handling.

Analysis-Report

Right-click on an Analysis-Report icon ( ) to display the following menu options.

Menu	*Description*
COPY	Copies the report criteria to the Clipboard.
REMOVE	Removes the Analysis-Report from the Method and places it in Components|Report Methods.

Components

Right-click on any component ( ) to display the following menu option:

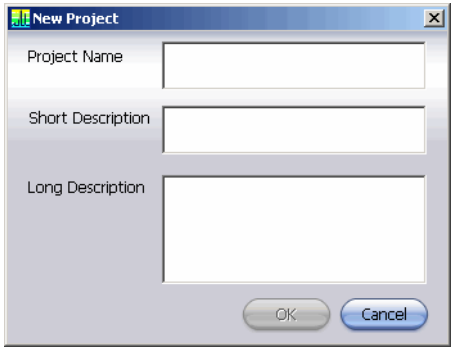
Menu	*Description*
DELETE	Deletes the component and moves it to the Purge and Recover bin.

Creating a Project

Create a Project by associating Applications and Methods.

The drag-and-drop feature allows easy creation of a Project. You can drag Applications into the workspace and then drop them in a Project.

To create a new Project



1 On the **LIQUID CHROMATOGRAPHY AND FRACTION COLLECTION** menu, select **PROJECT LIBRARY**.

2 In the Project Library, click **CREATE NEW PROJECT**. The New Project dialog is displayed.

3 In the New Project dialog, do the following:

   a) In the ***Project Name*** field, type a name.

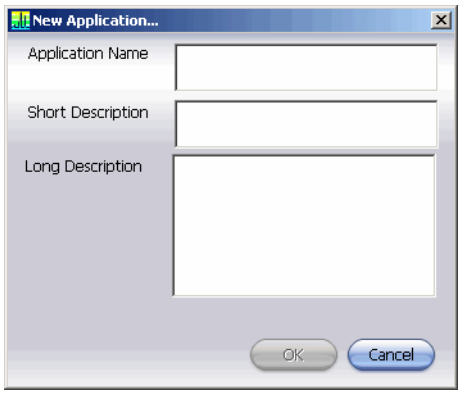
   b) In the ***Short Description*** field (optional), type a brief description of the Project.

   c) In the ***Long Description*** field (optional), type a detailed description of the Project.

   d) Click **OK**. The Project Library is refreshed with the new Project listed in the workspace.

4 To add an Application to the Project, do one of the following:

- Right-click on the Project and select **CREATE APPLICATION...** , The New Application... dialog is displayed.



The New Application... dialog

1) In the ***Application Name*** field, type a name.
2) In the ***Short Description*** field (optional), type a brief description of the Application.
3) In the ***Long Description*** field (optional), type a detailed description of the Application.
4) Click **OK**. The Project Library is refreshed with the new Application listed in the Applications palette and in the Project.

- From the Applications palette, drag an Application into the workspace and then drop it in the Project.

5 To add a Method to the Application, do one of the following:

- Right-click on the Application and select **CREATE METHOD**. The Method Builder opens.
- From the Methods palette, drag a Method into the workspace and then drop it in the Application.

Sharing a Project

To enable other users to view or modify a Project, it must be shared. Once shared, the logged on user can act on the Project per the permissions assigned to that user's group. For example, a user with the Modify Project Library permission can make changes to a Project that has been shared with him.

Projects are automatically shared with all members of the default Admin group and can be accessed by those members by selecting "All projects for which User has access" filter criteria. Only members of the default Admin group can unshare a Project with other members of the default Admin group.

To share a project, do the following:

1 In the Project Library, right-click the Project to be shared and select **SHARE...** .

2 From the drop-down list of Groups, select the Group with which the Project should be shared.

3 After the Group is selected, the list of Users in that group displays. Select the check box next to each User with whom the Project should be shared.

4 Click **UPDATE**.

5 Repeat for each additional Group.

Modifying a Project

You can modify a Project by doing the following:

- Changing the description.
- Adding Applications.
- Removing Applications.
- Changing the Share settings.

Changing Description

To change the description after the Project has been created:

1 Right-click on the Project and select **CHANGE DESCRIPTION**.

2 In the ***Short Description*** field (optional), type a brief description of the Application.

3 In the ***Long Description*** field (optional), type a detailed description of the Application.

Adding Applications

From the Applications palette, drag an Application into the workspace and then drop it in the Project.

If the application already exists in another project, a dialog is displayed in which the application can be specified as Universal. If the Application is Universal, it cannot be renamed and any changes to an Application or its results are updated in all copies of that Application. For example, if a Method is removed from the original Application, it will also be removed from the added Application.

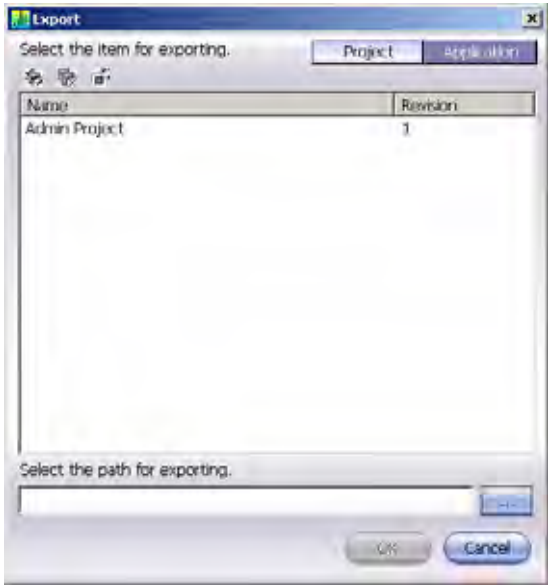
If Make Application Universal is cleared, it is recommended to rename the Application as any updates made to the original Application will not be reflected in the added Application.

Removing Applications

You can remove an Application from a Project without deleting the Application. To remove an Application, right-click on the Application and select **REMOVE**. The Application is removed from the Project, but remains in the Applications palette.

Exporting

In the Project Library, both Projects and Applications can be exported.



Exporting Projects

To export a Project

1 In the Project Library, click **EXPORT**. The Export window is displayed.

2 In the Export window, do the following:

a) Select the Project tab.

b) In the ***Select the item for exporting.*** field, select the Project(s).

To select multiple Projects in a sequential order, hold SHIFT + any arrow key simultaneously.

To select Projects in a random order, hold CTRL and select multiple Projects with the mouse.

To select all Projects, click .

To clear all selected Projects, click .

To invert the selection of Projects, click .

c) In the ***Select the path for exporting***. field, do the following:

1) Click ... . The Browse For folder window is displayed.

You can create a new folder from the Browse For folder window.

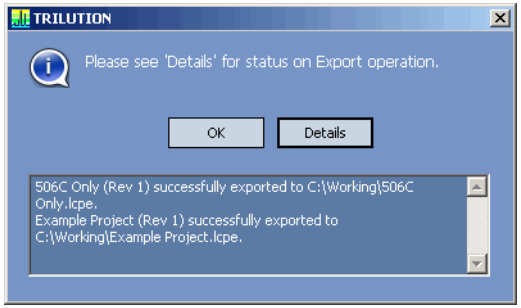
2) On the Browse For folder window, select a folder and click **OK**.

3 Click **OK**. On completion of the Export operation, the Project is saved in the specified folder with a .LCPE extension. The TRILUTION information dialog box is displayed.

If a Project with the same name is found in the Export path, an option is provided to rename or overwrite the Project or to skip the Export operation for that Project.

a) On the TRILUTION information dialog box, do the following:

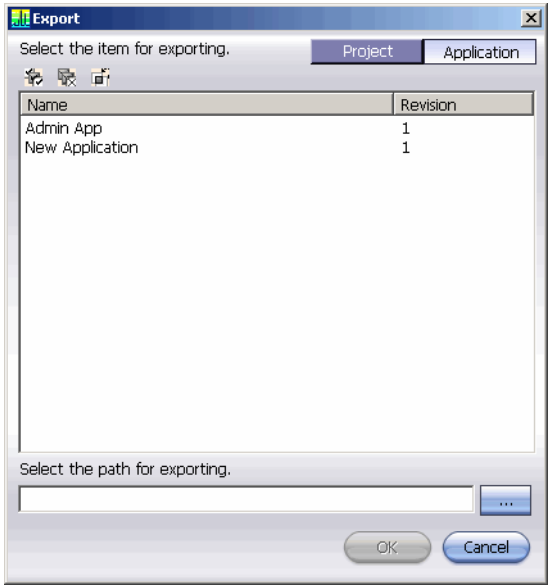
- To view the log information of the Export operation, click **DETAILS**.
- Click **OK**.


TRILUTION
Please see 'Details' for status on Export operation.
OK
Details
506C Only (Rev 1) successfully exported to C:\Working\506C Only.lcpe.
Example Project (Rev 1) successfully exported to C:\Working\Example Project.lcpe.

The TRILUTION information dialog box

Exporting Applications

To export an Application



1 In the Project Library, click **EXPORT**. The Export window is displayed.

2 In the Export window, do the following:

a) Select the Application tab.

b) In the ***Select the item for exporting.*** field, select the Application(s).

To select multiple Applications in a sequential order, hold SHIFT + any arrow key simultaneously.

To select Applications in a random order, hold CTRL and select multiple Applications with the mouse.

To select all Applications, click .

To clear all selected Applications, click .

To invert the selection of Applications, click .

c) In the ***Select the path for exporting***. field, do the following:

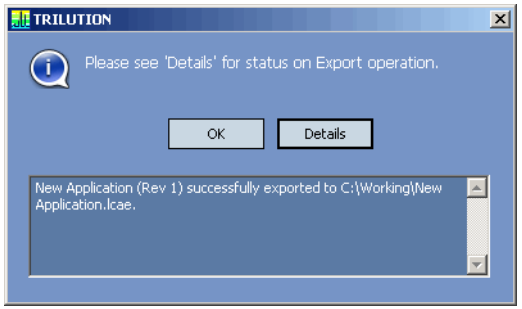
1) Click ... . The Browse For folder window is displayed.

You can create a new folder from the Browse For folder window.

2) On the Browse For folder window, select a folder and click **OK**.

3 Click **OK**. On completion of the Export operation, the Project is saved in the specified folder with a .LCAE extension. The TRILUTION information dialog box is displayed.

If an Application with the same name is found in the Export path, an option is provided to rename or overwrite the Application or to skip the Export operation for that Application.


TRILUTION
Please see 'Details' for status on Export operation.
OK
Details
New Application (Rev 1) successfully exported to C:\Working\New Application.lcae.

a) On the TRILUTION information dialog box, do the following:

- To view the log information of the Export operation, click **DETAILS**.
- Click **OK**.

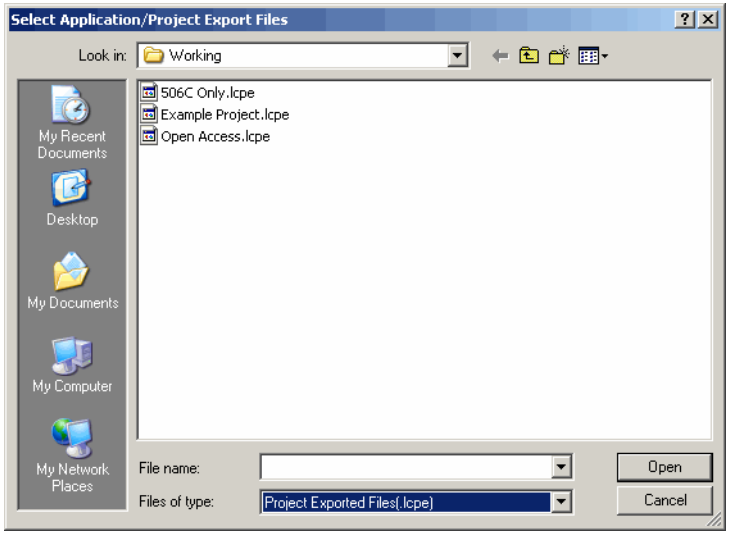
Importing

In the Project Library, both Projects and Applications can be imported.

Importing Projects

To import a Project

1 In the Project Library, click **IMPORT**. The Select Application/Project Export Files window is displayed.



The Select Application/Project Export Files window

2 From the Select Application/Project Export Files window, do the following:

a) Browse for and select the Project Exported Files.

To select multiple Projects in a sequential order, hold SHIFT + any arrow key simultaneously.

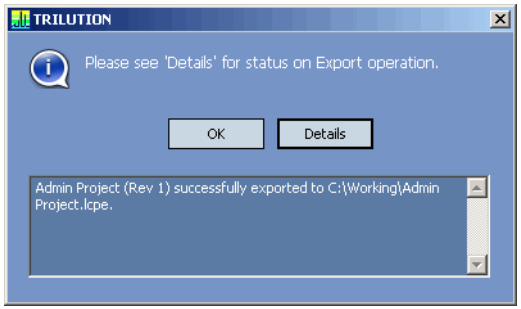
To select Projects in a random order, hold CTRL and select multiple Projects with the mouse.

b) Click **OPEN**. On completion of the Import operation, the TRILUTION information box is displayed.

If a Project, Method, or Application with the same name is found, an option is provided to import the Method as a new revision or rename the Project, Method, or Application.

c) On the TRILUTION information dialog box, do the following:

- To view the log information of the Import operation, click **DETAILS**.
- Click **OK**.

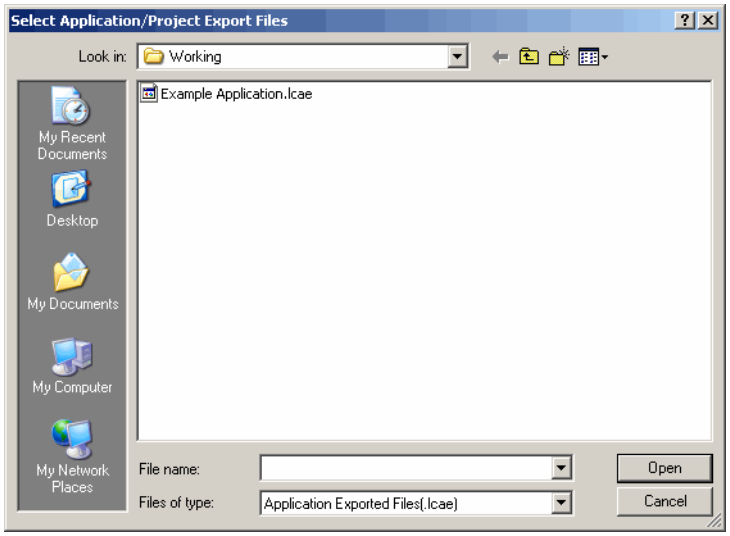

TRILUTION
Please see 'Details' for status on Export operation.
OK
Details
Admin Project (Rev 1) successfully exported to C:\Working\Admin Project.lcpe.

The TRILUTION information dialog box

Importing Applications

To import an Application

1 In the Project Library, click **IMPORT**. The Select Application/Project Export Files window is displayed.



The Select Application/Project Export Files window

2 From the Select Application/Project Export Files window, do the following:

a) Browse for and select the Application Exported Files.

To select multiple Applications in a sequential order, hold SHIFT + any arrow key simultaneously.

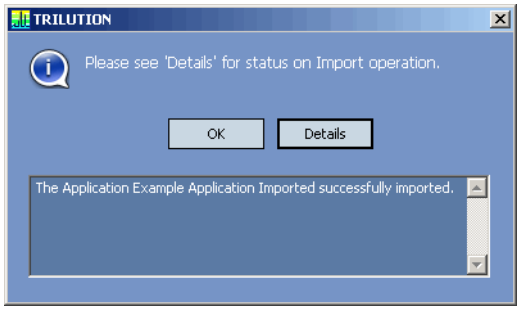
To select Applications in a random order, hold CTRL and select multiple Applications with the mouse.

b) Click **OPEN**. On completion of the Import operation, the TRILUTION information box is displayed.

If a Task, Method, or Application with the same name is found, an option is provided to import the Task or Method as a new revision or rename the Task, Method, or Application.

c) On the TRILUTION information dialog box, do the following:

- To view the log information of the Import operation, click **DETAILS**.
- Click **OK**.



The TRILUTION information dialog box

Deleting Projects

To delete a Project, do the following:

1 Select a Project and right-click to view the submenu. On the submenu, click **DELETE**.

2 On the Delete confirmation dialog box, click **YES**. The Project is deleted.

Projects cannot be deleted if they contain Applications. Remove or delete associated Applications before attempting to delete the Project.

Viewing Results

To view results, do one of the following:

- Right-click on an Application and select **RESULT**.
- Double-click the Result component (Result).

For more information about Results, refer to ***Chapter 12, Results***.

Working with Tasks 3

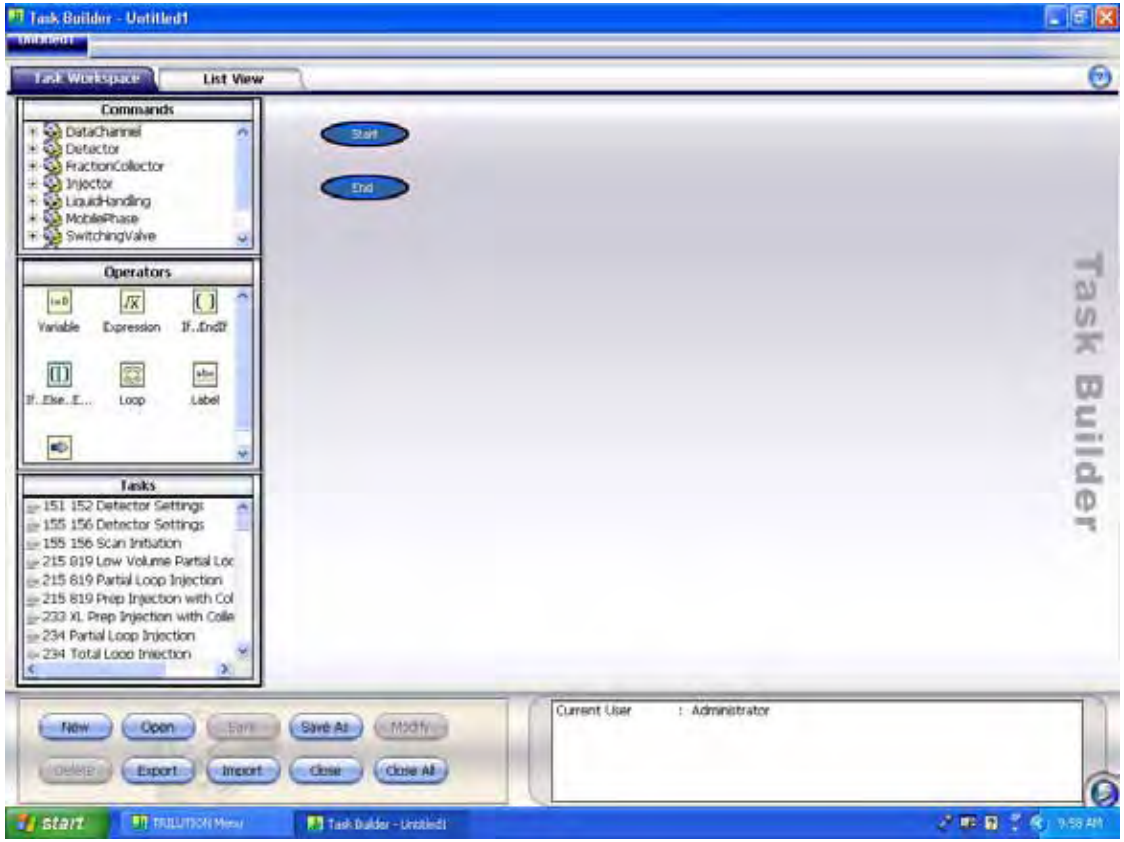
A Task is an action to be performed on a specific instrument. It is a combination of Commands and Operators. A Task serves as a building block for a Method.

The Task Builder allows you to create, modify, delete, export, and import Tasks.

The drag-and-drop feature allows easy creation of Tasks. You can drag Commands, Tasks, Variables, Operators and Expressions and then drop them in the workspace.

A Task is positioned anywhere in the Task Builder workspace, depending on where the Task is dropped.

Tasks can be exported or imported across locations. The new Tasks saved are listed in the Tasks palette. Multiple Tasks can be opened at a time.



The Task Builder window

The Task Builder is a graphical user interface used to build a Task. The Task window has the following palettes:

Commands: Lists the available Commands, organized by instrument type.

Operators: Lists the Operators, Variables, and Expressions.

Tasks: Lists the pre-defined Tasks and the saved Tasks.

Creating a Task

To open the Task Builder

On the **LIQUID CHROMATOGRAPHY AND FRACTION COLLECTION** menu, select **TASK**. The Task Builder is displayed.

Commands

A Command serves as the building block of a Task. They are the instructions to be performed on instruments. The Commands are instrument specific and hence control the instrument operations.

A Command has a set of properties. These properties vary in each Command. From the Command Property window, you can do the following:

- Move to the Next command properties.
- Move to the Previous command properties.
- Create Variables for the Task.

A Command cannot be added, modified, or deleted.

Operators

From the Operators palette, you can drag the operators and then drop them in the workspace. For details, see ***Chapter 14, Working with Expressions, Variables, and Operators.***

Variables

You can drag and drop a Variable in the workspace. The Variables can be used for the following in a Task:

- Command
- Loop
- If..EndIf
- If..Else
- Expression
- Label

Conditional Operators

You can drag the conditional operators and drop them in the workspace. Variables, Tasks, and Expressions can be added into these conditional operators. For more information about conditional operators, see **Conditional Operators** on page 14-11.

Expressions

You can create Expressions using the Variables defined in the Task Builder.

Nesting Tasks

A Task placed within a Task is referred to as a Nested Task. You can drag a Task from the Tasks palette and drop it in another Task displayed in the workspace to create a Nested Task.

To create a new Task

1 On the Task Builder, click **NEW**. The Task Builder workspace is available for further actions.

2 From the Commands palette, do the following:

a) Drag a Command and drop it in the workspace. The Command icon with the Command Properties window is displayed in the workspace.

b) On the Command Properties window, do the following:

1) In the ***Value*** field, type the value or select a Variable name defined. The ***Range*** field provides choices for acceptable values.

2) Click **OK**.

The values for the Command property fields get populated with default values, if available.

New Variables can be created from the Command Properties window.

3 From the Operators palette, do the following:

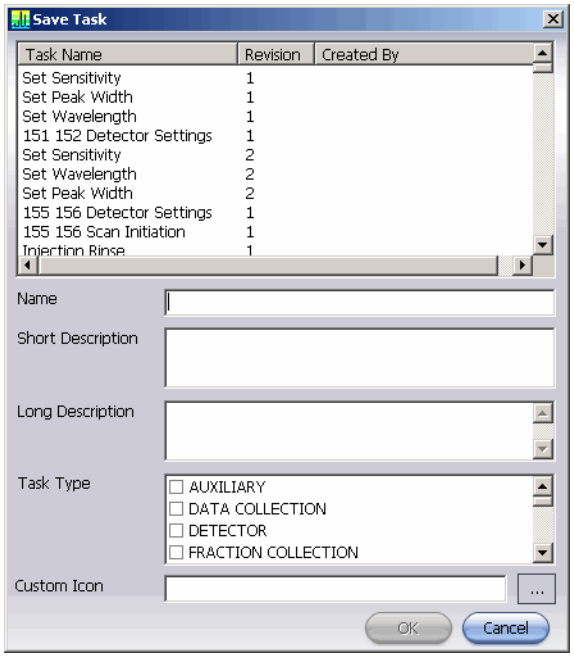
a) Drag an Operator and drop it in the workspace. The icon for the Operator with the Properties window specific to the Operator is displayed in the workspace.

b) On the properties window for the Operator, do the following:

1) In the ***Value*** field, type the value or the Variable name, if any, defined.

2) Click **OK**.

4 Click **SAVE**. The Save Task window is displayed.



The Save Task window

5 On the Save Task window, do the following:

a) In the ***Name*** field, type a Task name.

b) In the ***Short Description*** field (optional), type a brief description about the Task.

c) In the ***Long Description*** field (optional), type a longer description about the Task.

The following special characters are not permitted in names or descriptions: ampersand (&), apostrophe (‘), greater than (>), and back slash (\).

d) In the Task Type field, check the appropriate box or boxes to indicate the filtering for this Task on the Control tab in the Method Builder.

e) Click the browse ( ) button and then select an icon for the Task (optional). The icon can be of file type Icon (.ICO), Bitmap (.BMP), or JPEG (.JPG).

f) Click **OK**.

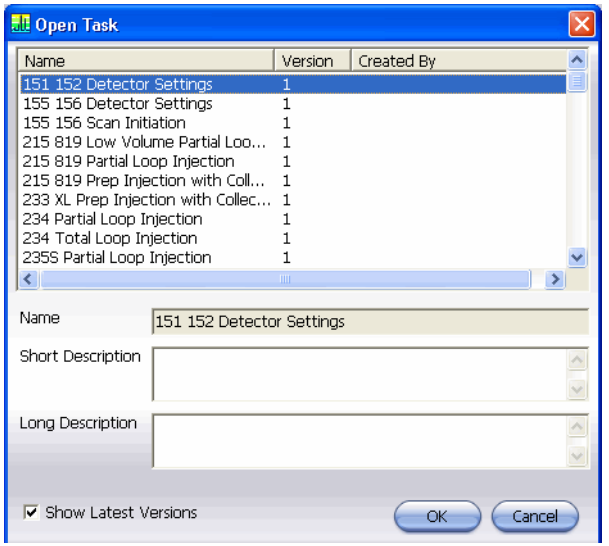
The Task is saved and listed in the Tasks palette.

Viewing a Task

On the Task Builder, do one of the following:

- On the Tasks palette, do one of the following:
  - Double-click a Task.
  - Right-click on a Task and then on the submenu displayed, click **OPEN**.
- Click **OPEN**. The Open Task window is displayed.
  a) Optionally, clear the Show Latest Versions check box to see all versions of all Tasks that have been created on the computer and have not been deleted.
  b) Select the Task to open.
  c) Click **OK**.

  The Task is displayed in the workspace.



Multiple Tasks can be open in the same builder. Individual tabs appear at the top of the window for each open Task. Click on the tab to view the Task in the workspace.

List View

Click the List View tab to see the following, if used, in the open Task:

- Commands
- Tasks
- Variables
- Default values for variables

Modifying a Task

You can modify a Task by doing the following:

- Adding Tasks, Commands, Variables, Operators and Expressions to the workspace.
- Deleting Tasks, Commands, Variables, Operators and Expressions from the workspace.
- Modifying the properties of the Tasks, Commands, Variables, Operators and Expressions in the workspace.
- Changing the short description, long description or task type.

When you right-click on a Task, Command, Variable, Operator, or Expression in the workspace, a menu displays with the following options: **PROPERTIES...**, **DELETE**, or **COPY**. To paste, right-click anywhere in the workspace and select **PASTE** from the menu.

You can delete Tasks and the Operators in the workspace by pressing the **DELETE** key.

To modify a Task

1 To open a Task, see **Viewing a Task** on page 3-9.

2 To make changes do one of the following:

- To save changes to the existing Task, click **SAVE**.

Gilson-supplied tasks cannot be saved using the supplied name.

- To save changes to a new Task and save with a different name, click **SAVE AS**. The Save Task As window is displayed.
- On the Save Task As window, do the following:

  1) In the ***Name*** field, type a Task name.

  2) In the ***Short Description*** field (optional), type a brief description about the Task.

  3) In the ***Long Description*** field (optional), type a longer description about the Task.

The following special characters are not permitted in names or descriptions: ampersand (&), apostrophe (‘), greater than (>), and back slash (\).

  4) In the Task Type field, check the appropriate box or boxes to indicate the filtering for this Task on the Control tab in the Method Builder.

5) Click the browse ( ) button and then select an icon for the Task (optional). The icon can be of file type Icon (.ICO), Bitmap (.BMP), or JPEG (.JPG).

6) Click **OK**.

3 To modify the short description, long description, and task type, do the following:

a) Click **MODIFY**.

b) In the ***Short Description*** field (optional), type a brief description about the Task.

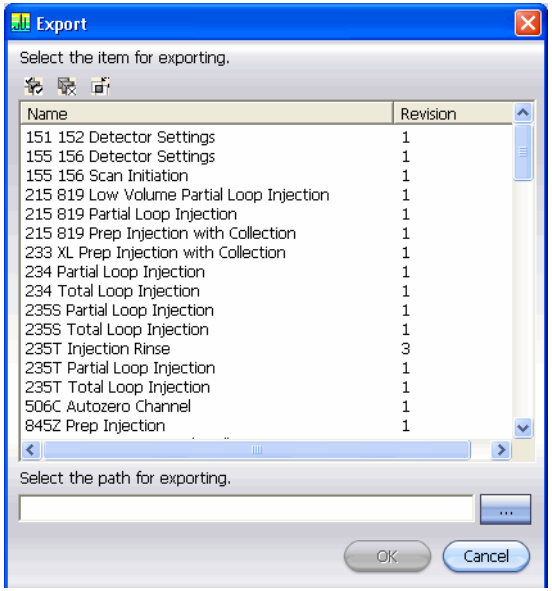
c) In the ***Long Description*** field (optional), type a longer description about the Task.

d) In the Task Type field, check the appropriate box or boxes to indicate the filtering for this Task on the Control tab in the Method Builder.

Exporting a Task

To export a Task

1 On the Task Builder, click **EXPORT**. The Export window is displayed.


Export
Select the item for exporting.
Name
Revision
151 152 Detector Settings 1
155 156 Detector Settings 1
155 156 Scan Initiation 1
215 819 Low Volume Partial Loop Injection 1
215 819 Partial Loop Injection 1
215 819 Prep Injection with Collection 1
233 XL Prep Injection with Collection 1
234 Partial Loop Injection 1
234 Total Loop Injection 1
235S Partial Loop Injection 1
235S Total Loop Injection 1
235T Injection Rinse 3
235T Partial Loop Injection 1
235T Total Loop Injection 1
506C Autozero Channel 1
845Z Prep Injection 1
Select the path for exporting.
...
OK
Cancel

The Export window

2 In the Export window, do the following:

a) In the ***Select the item for exporting.*** field, select the Task(s).

To select multiple Tasks in a sequential order, hold SHIFT + any arrow key simultaneously.

To select Tasks in a random order, hold CTRL and select multiple Tasks with the mouse.

To select all Tasks, click .

To clear all selected Tasks, click .

To invert the selection of Tasks, click .

b) In the ***Select the path for exporting***. field, do the following:

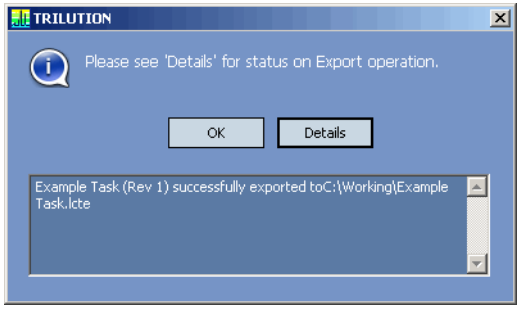
1) Click ... . The Browse For folder window is displayed.

You can create a new folder from the Browse For folder window.

2) On the Browse For folder window, select a folder and click **OK**.

3 Click **OK**. On completion of the Export operation, the Task is saved in the specified folder with a .LCTE extension. The TRILUTION information dialog box is displayed.

If a Task with the same name is found in the Export path, an option is provided to rename or overwrite the Task or to skip the Export operation for that Task.



The TRILUTION information dialog box

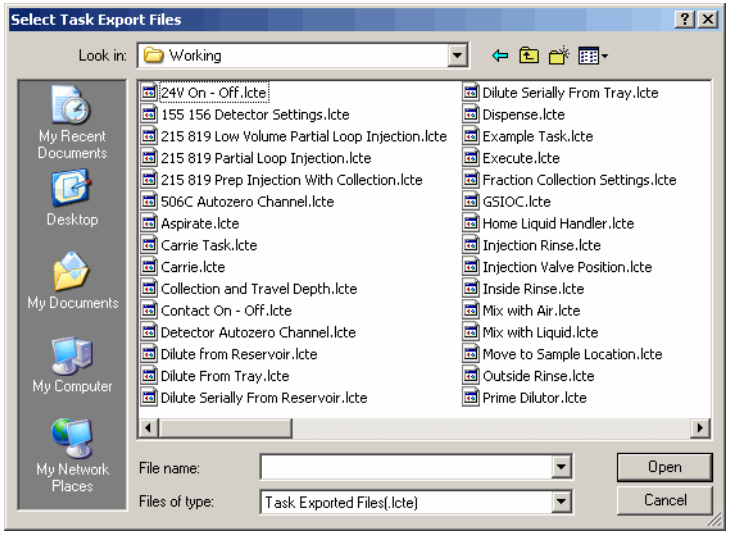
a) On the TRILUTION information dialog box, do the following:

- To view the log information of the Export operation, click **DETAILS**.
- Click **OK**.

Importing a Task

To import a Task

1 In the Task Builder, click **IMPORT**. The Select Task Export Files window is displayed.



The Select Task Export Files window

2 From the Select Task Export Files window, do the following:

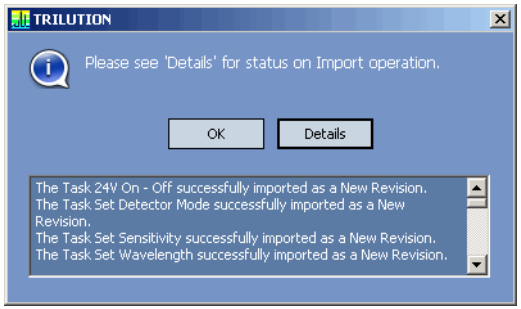
a) Browse for and select the Task Exported Files.

To select multiple Tasks in a sequential order, hold SHIFT + any arrow key simultaneously.

To select Tasks in a random order, hold CTRL and select multiple Tasks with the mouse.

b) Click **OPEN**. On completion of the Import operation, the TRILUTION information box is displayed.

If a Task or any Task placed within a Task with the same name is found, an option is provided to import the Task as a new version, import all Tasks as new version, or rename the Task.


TRILUTION
Please see 'Details' for status on Import operation.
OK
Details
The Task 24V On - Off successfully imported as a New Revision.
The Task Set Detector Mode successfully imported as a New Revision.
The Task Set Sensitivity successfully imported as a New Revision.
The Task Set Wavelength successfully imported as a New Revision.

The TRILUTION information dialog box

c) On the TRILUTION information dialog box, do the following:

- To view the log information of the Import operation, click **DETAILS**.
- Click **OK**.

Deleting a Task

To delete a Task

1 On the Tasks palette, do one of the following:

- Select a Task and right-click to view the submenu. On the submenu, click **DELETE**.

To select multiple Tasks in a sequential order, hold SHIFT + any arrow key simultaneously.

To select Tasks in a random order, hold CTRL and select multiple Tasks with the mouse.

- Open a Task and on the action bar, click **DELETE**. A Delete confirmation dialog box is displayed.

Gilson-supplied tasks cannot be deleted.

2 On the Delete confirmation dialog box, choose whether to delete only the current version or all versions of the Task. The default is to delete only the current version of the Task. To delete all versions of the Task, select the All versions check box.

3 Click **YES**. The Task is deleted.

Closing

Close the Open Task

To close the Task that is open in the workspace, click **CLOSE**.

Close All Open Tasks

To close all open Tasks, but leave the Task Builder open, click **CLOSE ALL**.

Close the Task Builder

Click × on the upper right corner of the Task Builder.

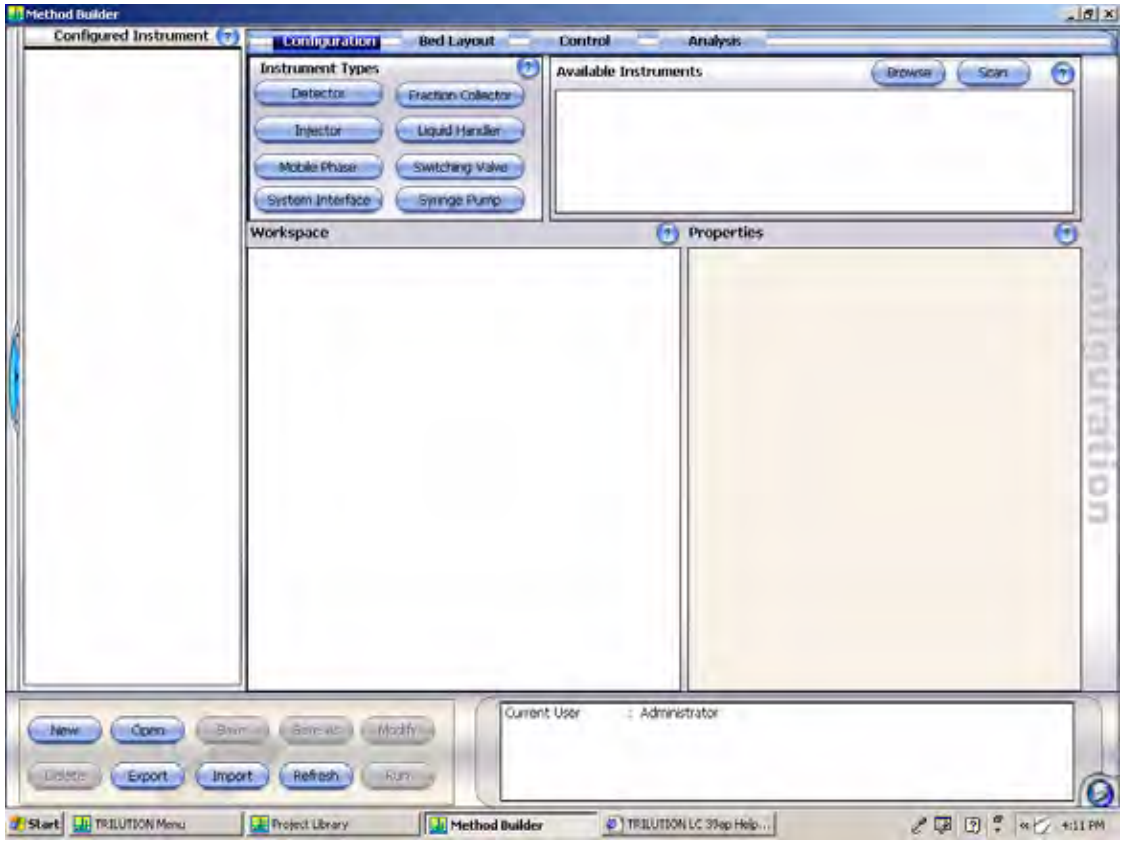
Method Builder - Configuration 4

A Configuration consists of a group of uniquely named instruments. The Configuration is part of a Method.

The drag-and-drop feature enables easy creation of Configurations. You can drag an instrument and drop it in the Workspace.

Configuration Tab Window

The Configuration window in the Method Builder is a graphical interface used to create a Configuration.



The Method Builder-Configuration tab window

It has the following sections:

Section	*Described on*
Configured Instrument Panel	page 4-4
Instrument Types	page 4-5
Available Instruments	page 4-5
Workspace	page 4-5
Properties	page 4-5

Configured Instrument Panel

This panel is used to provide information and also for navigation. Information provided is dependent on the instrument type.

Detector. Lists data channels and any associated analyses. Can navigate to the Analysis tab by clicking on an analysis name.

Fraction Collector. Lists Bed Layout. Can navigate to the Bed Layout tab by clicking the Bed Layout name.

Injector. Used only for navigation. Click on the instrument name to view the property page for that instrument.

Liquid Handler. Lists Bed Layout. Can navigate to the Bed Layout tab by clicking the Bed Layout name.

Mobile Phase. Used only for navigation. Click on the instrument name to view the property page for that instrument.

Switching Valve. Used only for navigation. Click on the instrument name to view the property page for that instrument.

System Interface. Lists data channels and any associated analyses. Can navigate to the Analysis tab by clicking on an analysis name.

Syringe Pump. Used only for navigation. Click on the instrument name to view the property page for that instrument.

Bed Layout tab

For a description of the Configured Instrument Panel as it relates to the Bed Layout tab, see **Configured Instrument Panel** on page 5-3.

Control tab

For a description of the Configured Instrument Panel as it relates to the Control tab, see **Configured Instrument Panel** on page 6-6.

Analysis tab

For a description of the Configured Instrument Panel as it relates to the Analysis tab, see **Configured Instrument Panel** on page 7-2.

Instrument Types

Lists the available instrument groups.

Available Instruments

Lists the instruments of the selected instrument group or those identified during the scan.

Workspace

Forms the area to create or view a Configuration.

Properties

Forms the area used to view and/or edit instrument properties.

Creating a Configuration

To create a Configuration

1 In the Method Builder, select the Configuration tab.

2 Do one of the following:

- From the Instrument Types, select an instrument group (Detector, Fraction Collector, Injector, Liquid Handler, Mobile Phase, Switching Valve, System Interface, or Syringe Pump). The instruments in that group are listed in the Available Instruments window.
- Click **SCAN**. TRILUTION searches for Gilson instruments that are powered ON and connected to the Gilson Serial Input/Output Channel (GSIOC) and then displays them in the Available Instruments window.
- Click **BROWSE**. Select an existing Configuration then click **OK**.

3 From the Available Instruments window, drag an instrument and then drop it in the Workspace.

If an instrument with the same GSIOC ID is found, an option is provided to add the instrument at a different GSIOC ID.

4 If a data instrument (Detector or System Interface) will be used, do the following:

a) Right-click on a data channel and select **PRIMARY CHANNEL**. One channel per Configuration must be specified as the primary channel.

b) Right-click on a data channel and select **CREATE ANALYSIS**. TRILUTION LC automatically creates an analysis for the first data channel. Do one of the following:

- Optionally, set the peak integration, report, and error handling options for the Analysis. See ***Chapter 7, Method Builder - Analysis*** for details.

- Click the Configuration tab and repeat step b for any additional data channels.
- Right-click on a data channel and select **SELECT ANALYSIS** to associate an existing analysis to the data channel.
- Right-click on an analysis and select **COPY ANALYSIS** to copy the analysis to the clipboard. To paste and automatically rename the analysis, right-click on the data channel and select **PASTE ANALYSIS**.

c) Right-click on an analysis and select **DEFAULT ANALYSIS** to specify which analysis TRILUTION LC will use during the run.

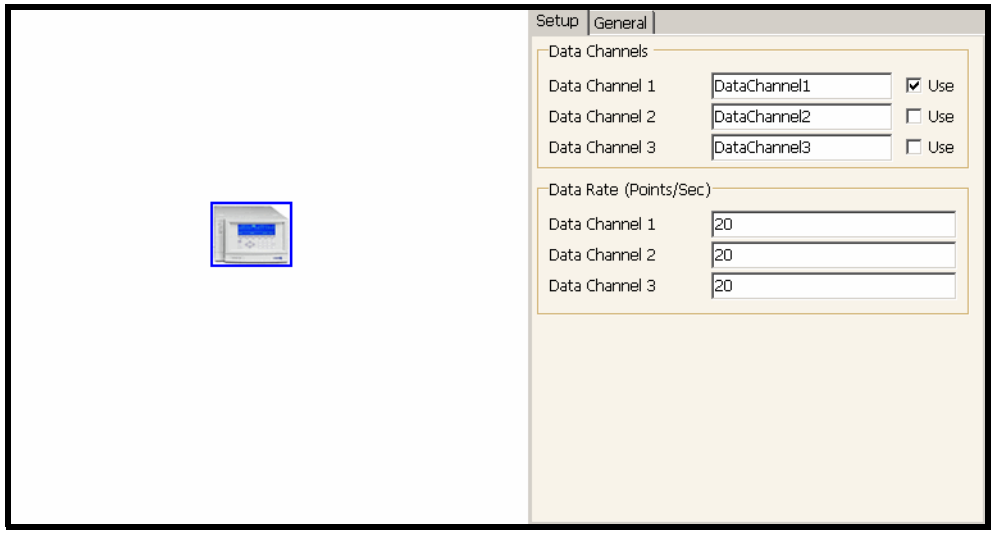
Instrument Properties

Each instrument has a set of properties defined on the Configuration tab that differ for each instrument.

Instrument Name	*For List of Properties:*
151 Detector	See page 4-11.
152 Detector	See page 4-13.
155 Detector	See page 4-15.
156 Detector	See page 4-17.
202C Fraction Collector	See page 4-19.
206 Fraction Collector	See page 4-21.
FC 203B Fraction Collector	See page 4-24.
FC 204 Fraction Collector	See page 4-27.
PREPFC Fraction Collector	See page 4-30.
Fraction Collection System	See page 4-33.
819 Injection Module	See page 4-36.
845Z Injection Module	See page 4-37.
215 Liquid Handler	See page 4-38.
215 Liquid Handler without Pump	See page 4-41.
231 XL Sample Injector	See page 4-44.

Instrument Name	*For List of Properties:*
232 XL Sample Injector	See page 4-47.
233 XL Sample Injector	See page 4-50.
234 Autoinjector	See page 4-54.
235 Autoinjector	See page 4-56.
GX-281 Liquid Handler	See page 4-59.
305 Pump	See page 4-64.
306 Pump	See page 4-68.
307 Pump	See page 4-72.
321 HPLC Pump	See page 4-76.
322 HPLC Pump	See page 4-82.
331 Prep-Scale HPLC Pump	See page 4-87.
332 Prep-Scale HPLC Pump	See page 4-92.
333 Prep-Scale HPLC Pump	See page 4-97.
334 Prep-Scale HPLC Pump	See page 4-102.
VALVEMATE	See page 4-107.
506C System Interface	See page 4-108.
402 Pump Dual	See page 4-111.
402 Pump Single	See page 4-113.

151 Detector



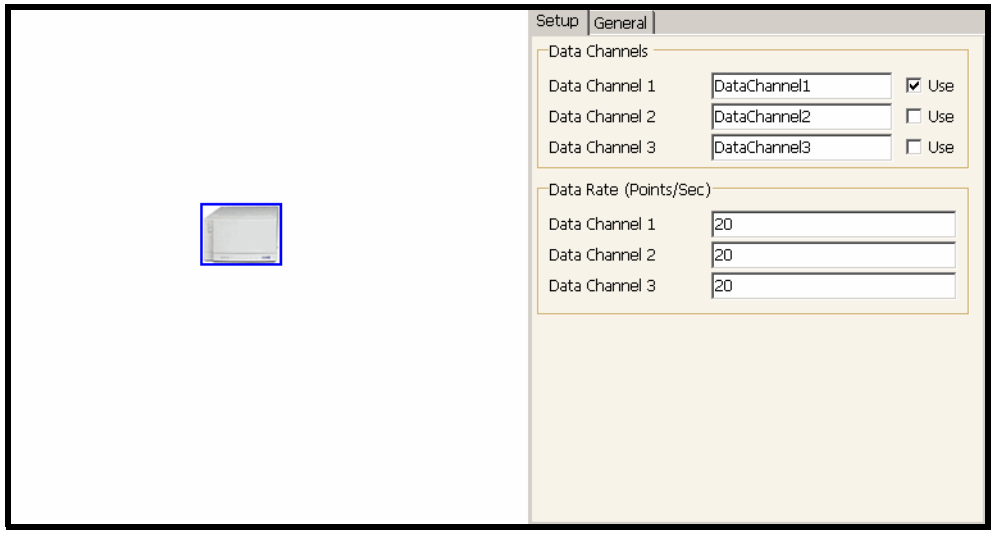
The 151 Detector Properties Window

151 Detector Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Data Channels Data Channel 1 Data Channel 2 Data Channel 3	Optionally, type a description for each data channel. This description and the data channel's signal will be displayed at all times in the status box during an Application Run if the Use check box is selected for that data channel. The Use check box for Data Channel 1 defaults selected.	DataChannel1 DataChannel2 DataChannel3	N/A
Data Rate (Points/Sec) Data Channel 1 Data Channel 2 Data Channel 3	The number of data points collected per second for the channel.	20	1–80
Instrument Type	The Gilson-supplied name for the instrument.	151 Detector	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	151 Detector (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	16	10–19

151 Detector Properties

152 Detector



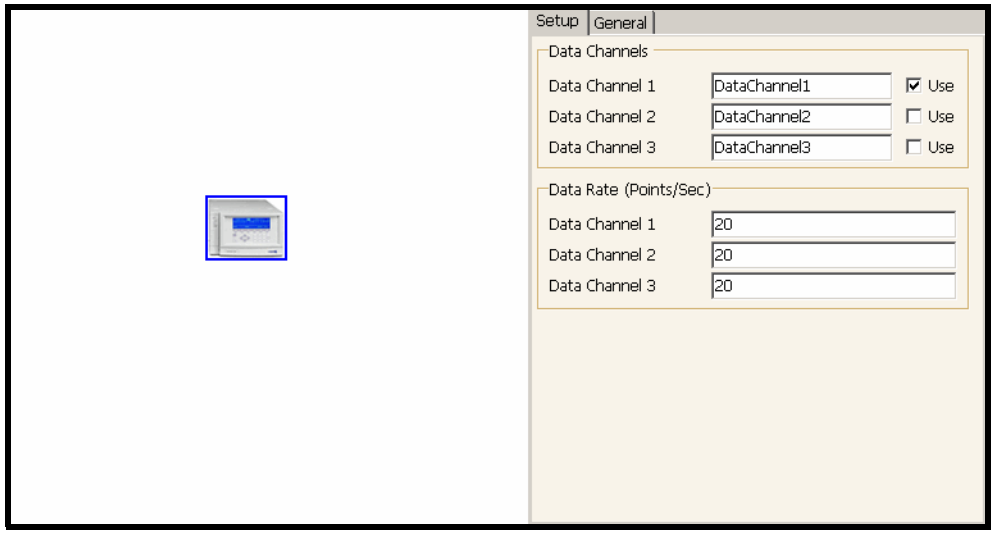
The 152 Detector Properties Window

152 Detector Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Data Channels Data Channel 1 Data Channel 2 Data Channel 3	Optionally, type a description for each data channel. This description and the data channel's signal will be displayed at all times in the status box during an Application Run if the Use check box is selected for that data channel. The Use check box for Data Channel 1 defaults selected.	DataChannel1 DataChannel2 DataChannel3	N/A
Data Rate (Points/Sec) Data Channel 1 Data Channel 2 Data Channel 3	The number of data points collected per second for the channel.	20	1–80
Instrument Type	The Gilson-supplied name for the instrument.	152 Detector	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	152 Detector (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	16	10–19

152 Detector Properties

155 Detector

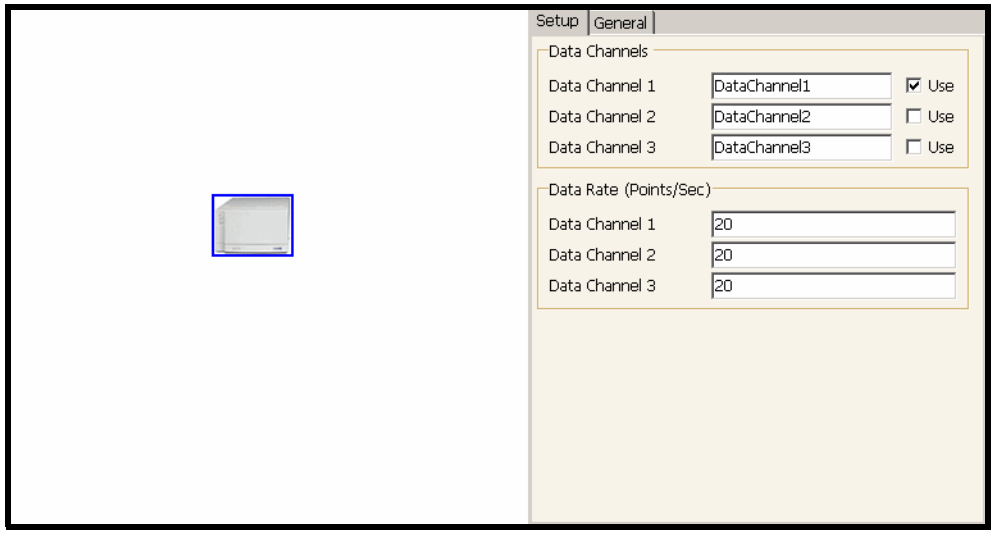


The 155 Detector Properties Window

155 Detector Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Data Channels Data Channel 1 Data Channel 2 Data Channel 3	Optionally, type a description for each data channel. This description and the data channel's signal will be displayed at all times in the status box during an Application Run if the Use check box is selected for that data channel. The Use check box for Data Channel 1 defaults selected.	DataChannel1 DataChannel2 DataChannel3	N/A
Data Rate (Points/Sec) Data Channel 1 Data Channel 2 Data Channel 3	The number of data points collected per second for the channel.	20	1–80
Instrument Type	The Gilson-supplied name for the instrument.	155 Detector	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	155 Detector (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	16	10–19
155 Detector Properties			

156 Detector



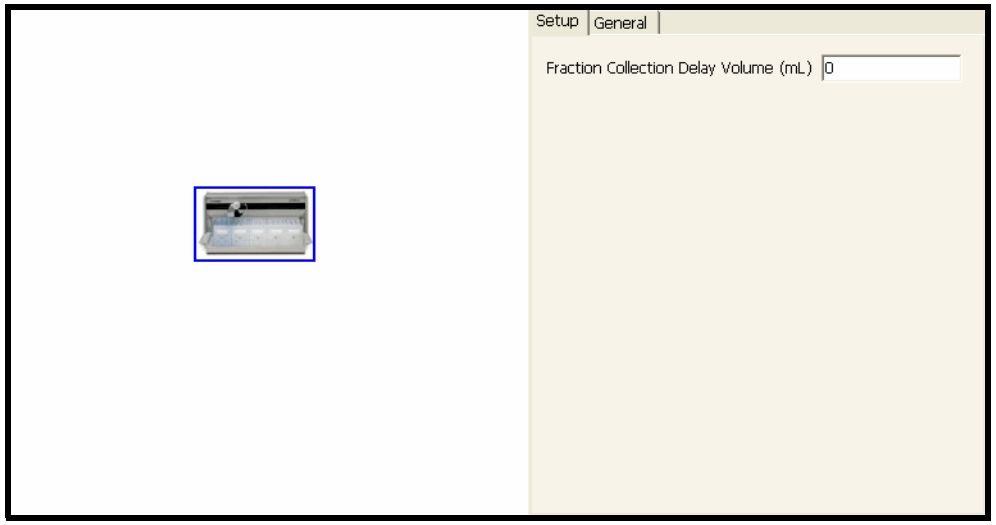
The 156 Detector Properties Window

156 Detector Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Data Channels Data Channel 1 Data Channel 2 Data Channel 3	Optionally, type a description for each data channel. This description and the data channel's signal will be displayed at all times in the status box during an Application Run if the Use check box is selected for that data channel. The Use check box for Data Channel 1 defaults selected.	DataChannel1 DataChannel2 DataChannel3	N/A
Data Rate (Points/Sec) Data Channel 1 Data Channel 2 Data Channel 3	The number of data points collected per second for the channel.	20	1–80
Instrument Type	The Gilson-supplied name for the instrument.	156 Detector	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	156 Detector (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	16	10–19

156 Detector Properties

202C Fraction Collector



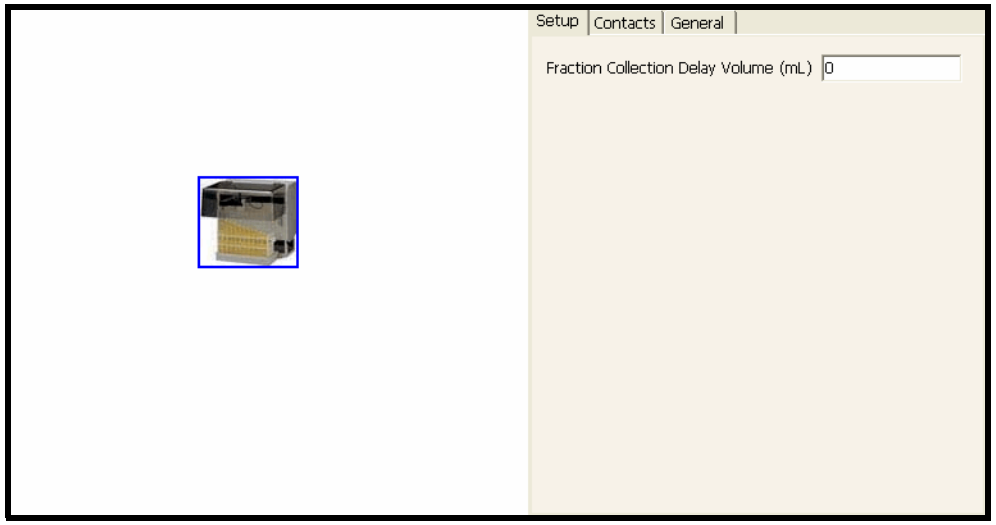
202C Fraction Collector Properties Window

202C Fraction Collector Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Fraction Collection Delay Volume (mL)	The volume in the flow path between the detector flow cell and the inlet to the fraction collection valve. See **Calculating Fraction Collection Delay Volume** on page 4-119 for more information.	0	N/A
Instrument Type	The Gilson-supplied name for the instrument.	202C Fraction Collector	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	202C Fraction Collector (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	6	0–63

202C Fraction Collector Properties

206 Fraction Collector



206 Fraction Collector Properties Window

206 Fraction Collector Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Fraction Collection Delay Volume (mL)	The volume in the flow path between the detector flow cell and the inlet to the fraction collection valve. See **Calculating Fraction Collection Delay Volume** on page 4-119 for more information.	0	N/A
Contacts Output 1 Output 2 Output 3 Input A Input B	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run.	N/A	N/A
Instrument Type	The Gilson-supplied name for the instrument.	206 Fraction Collector	N/A

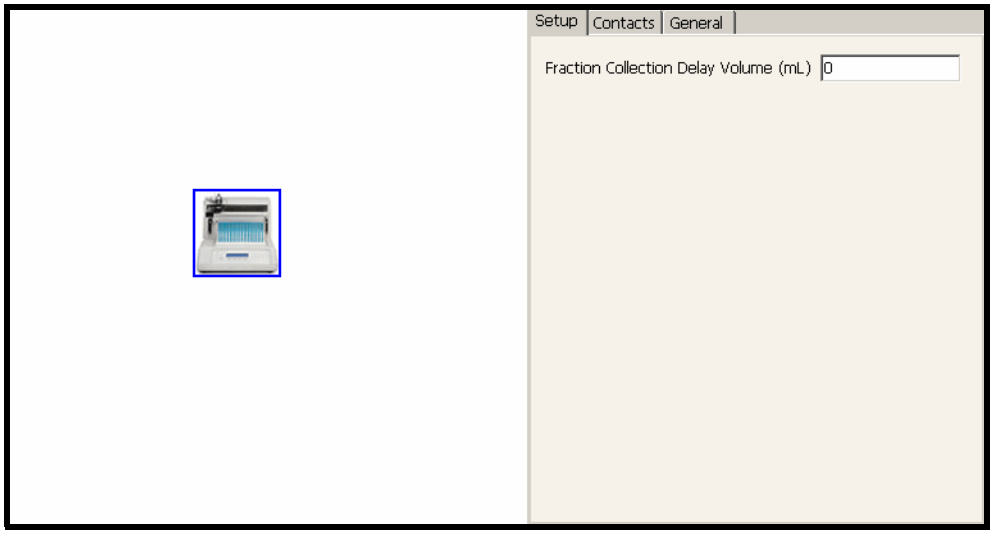
206 Fraction Collector Properties Table *(Page 1 of 2)*

206 Fraction Collector Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Instrument Name	The name that will be used to identify this instrument in a Task.	206 Fraction Collector (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	6	0–63

206 Fraction Collector Properties Table *(Page 2 of 2)*

FC 203B Fraction Collector



The FC 203B Fraction Collector Properties Window

FC 203B Fraction Collector Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Fraction Collection Delay Volume (mL)	The volume in the flow path between the detector flow cell and the inlet to the fraction collection valve. See **Calculating Fraction Collection Delay Volume** on page 4-119 for more information.	0	N/A
Contacts Output 1 Output 2 Input A Input B	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run.	N/A	N/A
Instrument Type	The Gilson-supplied name for the instrument.	FC 203B Fraction Collector	N/A

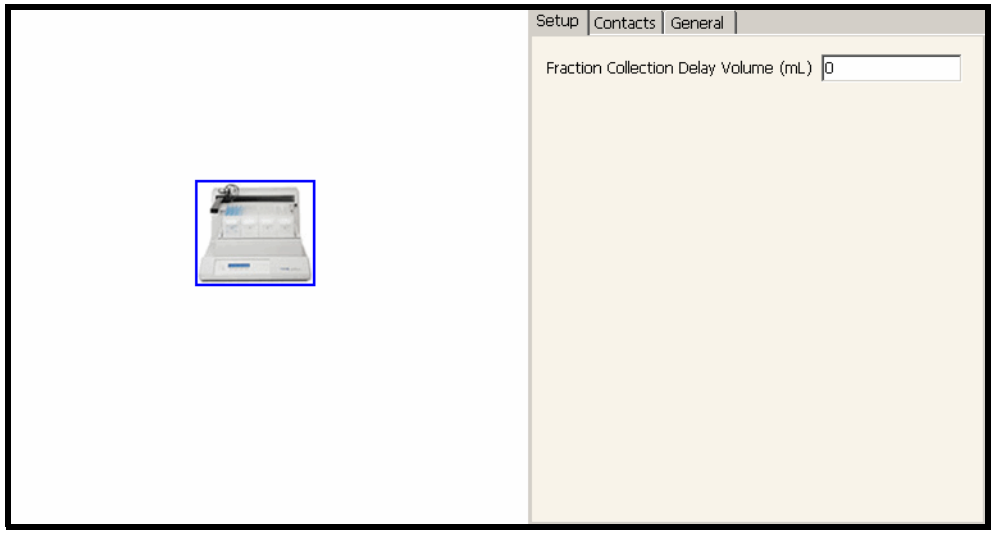
FC 203B Fraction Collector Properties Table *(Page 1 of 2)*

FC 203B Fraction Collector Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Instrument Name	The name that will be used to identify this instrument in a Task.	FC 203B Fraction Collector (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	6	0–63

FC 203B Fraction Collector Properties Table *(Page 2 of 2)*

FC 204 Fraction Collector



The FC 204 Fraction Collector Properties Window

FC 204 Fraction Collector Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Fraction Collection Delay Volume (mL)	The volume in the flow path between the detector flow cell and the inlet to the fraction collection valve. See **Calculating Fraction Collection Delay Volume** on page 4-119 for more information.	0	N/A
Contacts Output 1 Output 2 Input A Input B	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run.	N/A	N/A
Instrument Type	The Gilson-supplied name for the instrument.	FC 204 Fraction Collector	N/A

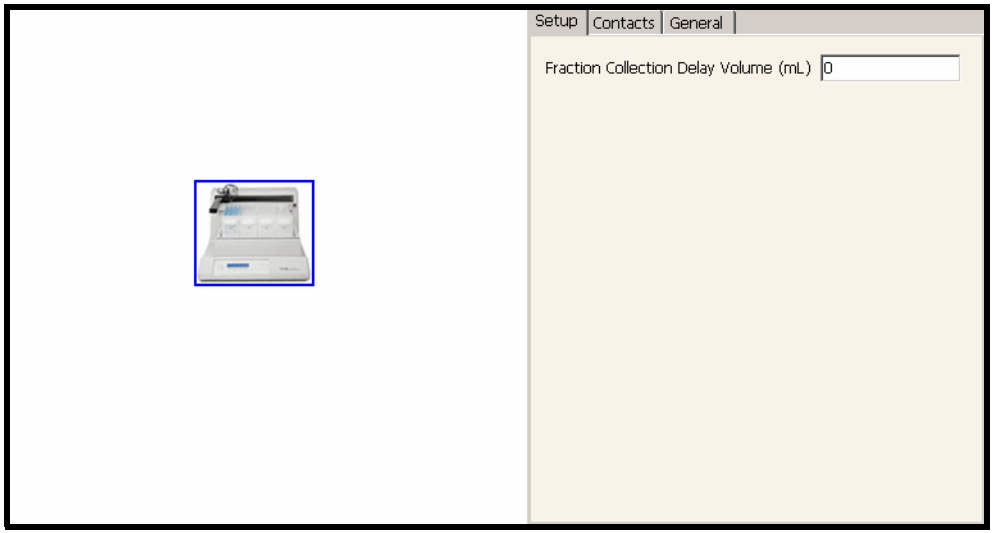
FC 204 Fraction Collector Properties Table *(Page 1 of 2)*

FC 204 Fraction Collector Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Instrument Name	The name that will be used to identify this instrument in a Task.	FC 204 Fraction Collector (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	6	0–63

FC 204 Fraction Collector Properties Table *(Page 2 of 2)*

PREPFC Fraction Collector



PREPFC Fraction Collector Properties Window

PREPFC Fraction Collector Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Fraction Collection Delay Volume (mL)	The volume in the flow path between the detector flow cell and the inlet to the fraction collection valve. See **Calculating Fraction Collection Delay Volume** on page 4-119 for more information.	0	N/A
Contacts Output 1 (Event) Output 2 (Prog) Input A (Start) Input B (Stop) Input C (Advance) Input D (Divert)	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run.	N/A	N/A
Instrument Type	The Gilson-supplied name for the instrument.	PREPFC Fraction Collector	N/A

PREPFC Fraction Collector PropertiesTable *(Page 1 of 2)*

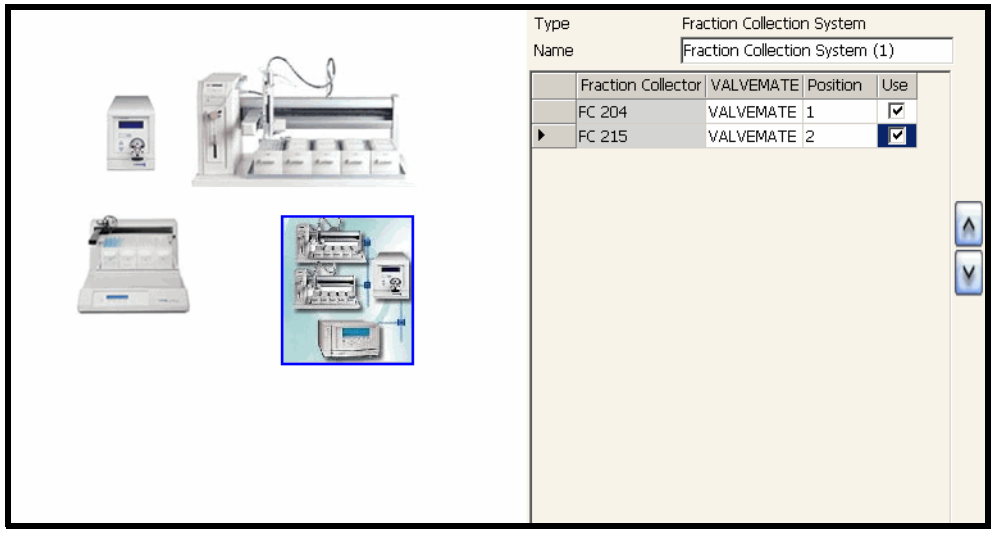
PREPFC Fraction Collector Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Instrument Name	The name that will be used to identify this instrument in a Task.	PREPFC Fraction Collector (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	6	0–63

PREPFC Fraction Collector PropertiesTable *(Page 2 of 2)*

Fraction Collection System

The Fraction Collection System (FCS) is a group of instruments that are combined to allow fraction collection to multiple beds. An FCS consists of two or more fraction collectors and a VALVEMATE. The Configuration can only include one FCS.



The Fraction Collection System Properties Window

Fraction Collection System Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Name	This property is not used by the software.	Fraction Collection System (1)	N/A
Fraction Collector	The fraction collectors in the Configuration.	N/A	N/A
VALVEMATE	The VALVEMATE, selected from a drop-down list of VALVEMATEs in the Configuration, that the FCS will use.	N/A	N/A
Position	The valve position on the VALVEMATE.	N/A	1–8, depending on the valve
Use	The fraction collectors that will be used.	N/A	N/A

Fraction Collection System Properties

Using an FCS

1 Drag two fraction collectors into the workspace (for example, a 215 Liquid Handler to be used as a fraction collector and an FC 204 Fraction Collector) and set the properties.

2 Drag a VALVEMATE into the workspace and set the properties. The VALVEMATE should be plumbed and ready to go at this point.

3 Drag a Fraction Collection System into the workspace.

   a) In the Name field, type a name for the FCS.

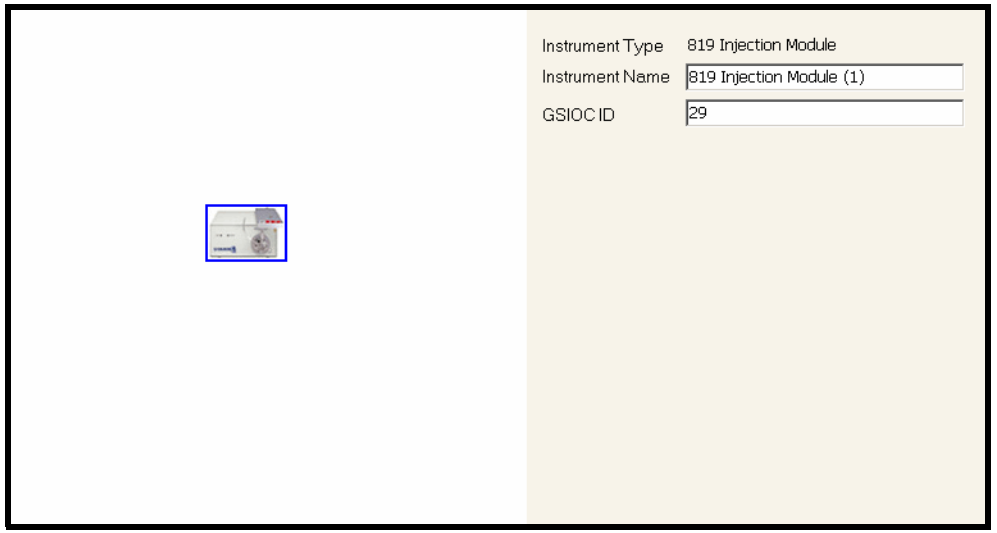
   b) In the VALVEMATE field, click the arrow and then select the VALVEMATE from the drop-down list.

   c) In the Position field, click the arrow and then select the VALVEMATE valve position from the drop-down list that corresponds to the first fraction collector.

      Note: When using a 2-position valve, choose 0 for position 1 or 1 for position 2.

   d) Repeat step 3 for additional fraction collectors.

819 Injection Module



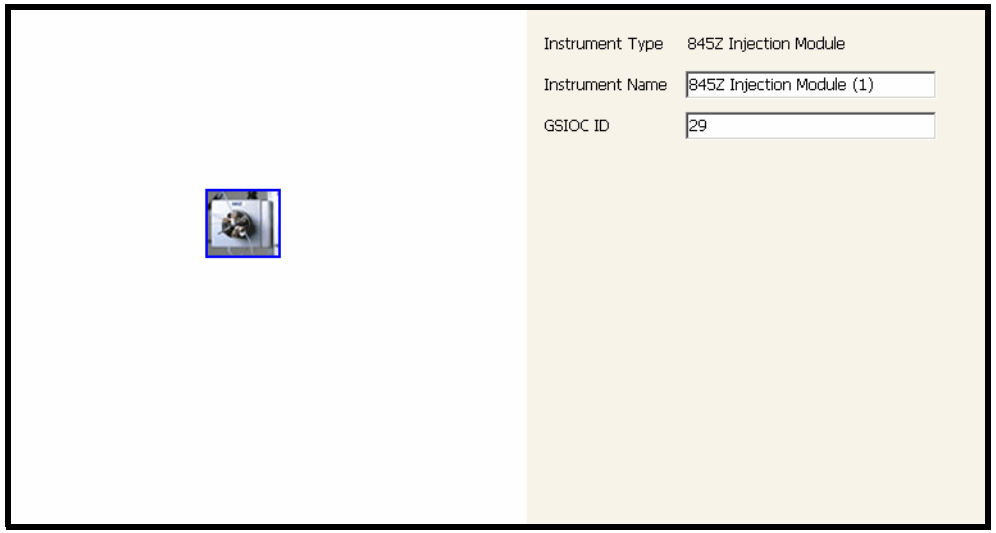
The 819 Injection Module Properties Window

819 Injection Module Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Instrument Type	The Gilson-supplied name for the instrument.	819 Injection Module	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	819 Injection Module (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	29	20–29

819 Injection Module Properties

845Z Injection Module



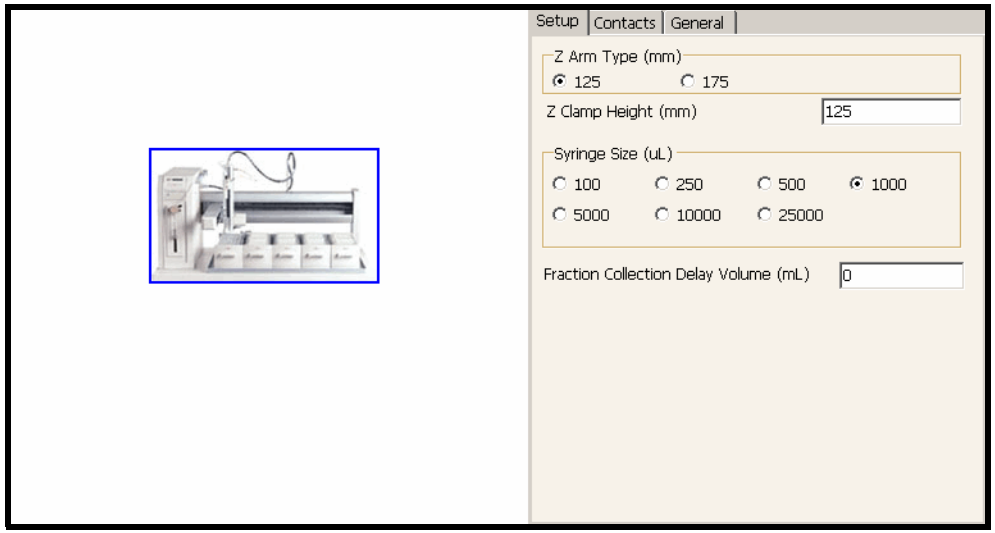
The 845Z Injection Module Properties Window

845Z Injection Module Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Instrument Type	The Gilson-supplied name for the instrument.	845Z Injection Module	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	845Z Injection Module (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	29	20–29

845Z Injection Module Properties

215 Liquid Handler



The 215 Liquid Handler Properties Window

215 Liquid Handler Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Z Arm Type (mm)	This is the height of the Z-arm installed on the liquid handler.	125	125, 175
Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	125	0–190

215 Liquid Handler Properties Table *(Page 1 of 3)*

215 Liquid Handler Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Syringe Size (µL)	The capacity of each installed syringe.	1000	100, 250, 500, 1000, 2500, 5000, 10000, 25000
Fraction Collection Delay Volume (mL)	The volume in the flow path between the detector flow cell and the inlet to the fraction collection valve. See **Calculating Fraction Collection Delay Volume** on page 4-119 for more information.	0	N/A

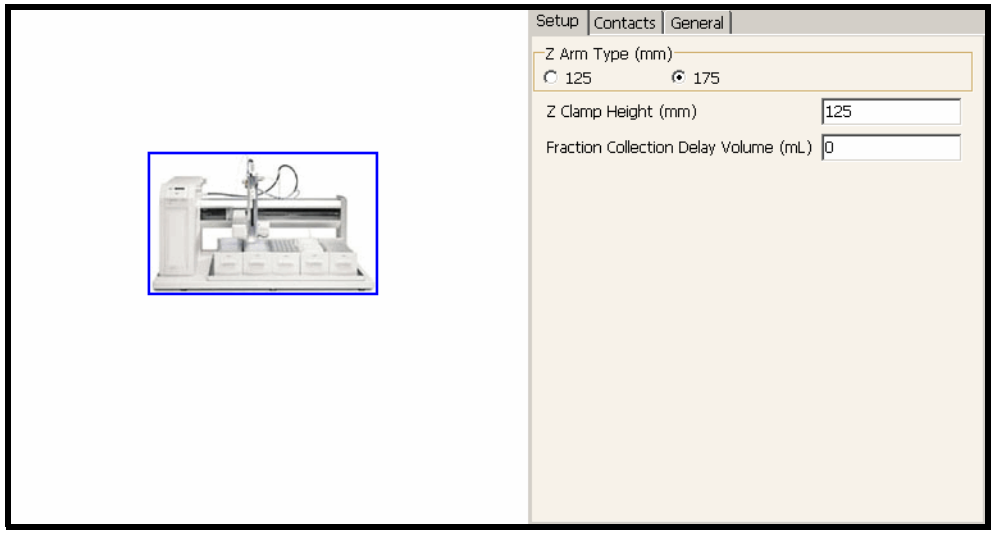
215 Liquid Handler Properties Table *(Page 2 of 3)*

215 Liquid Handler Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts Output 1 Output 2 Output 3 Output 4 Input A Input B Input C Input D	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run.	N/A	N/A
Instrument Type	The Gilson-supplied name for the instrument.	215 Liquid Handler	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	215 Liquid Handler (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	22	20–29

215 Liquid Handler Properties Table *(Page 3 of 3)*

215 Liquid Handler without Pump



The 215 Liquid Handler without Pump Properties Window

215 Liquid Handler without Pump Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Z Arm Type (mm)	This is the height of the Z-arm installed on the liquid handler.	125	125, 175
Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	125	0–190

215 Liquid Handler without Pump Properties Table *(Page 1 of 3)*

215 Liquid Handler without Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Fraction Collection Delay Volume (mL)	The volume in the flow path between the detector flow cell and the inlet to the fraction collection valve. See **Calculating Fraction Collection Delay Volume** on page 4-119 for more information.	0	N/A
Contacts Output 1 Output 2 Output 3 Output 4 Input A Input B Input C Input D	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run.	N/A	N/A

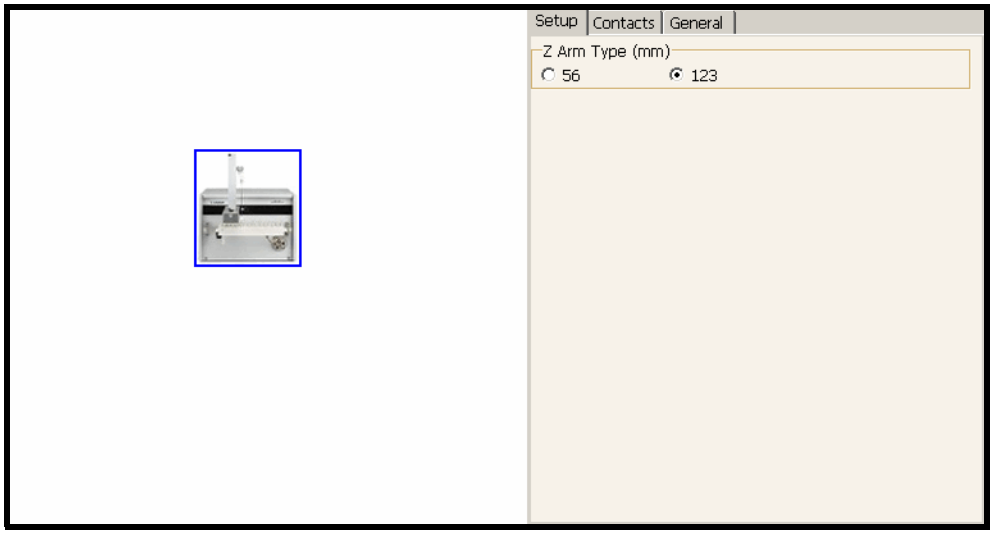
215 Liquid Handler without Pump Properties Table *(Page 2 of 3)*

215 Liquid Handler without Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Instrument Type	The Gilson-supplied name for the instrument.	215 Liquid Handler without Pump	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	215 Liquid Handler without Pump (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	22	20–29

215 Liquid Handler without Pump Properties Table *(Page 3 of 3)*

231 XL Sample Injector



The 231 XL Sample Injector Properties Window

231 XL Sample Injector Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Z Arm Type (mm)	This is the height of the Z-arm installed on the liquid handler.	123	56, 123
Contacts Output 1 Output 2 Output 3 Output 4 Output 5 Output 6 Output 7 Output 8 Input 1 Input 2 Input 3 Input 4 Input 5	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run.	N/A	N/A
Instrument Type	The Gilson-supplied name for the instrument.	231 XL Sample Injector	N/A

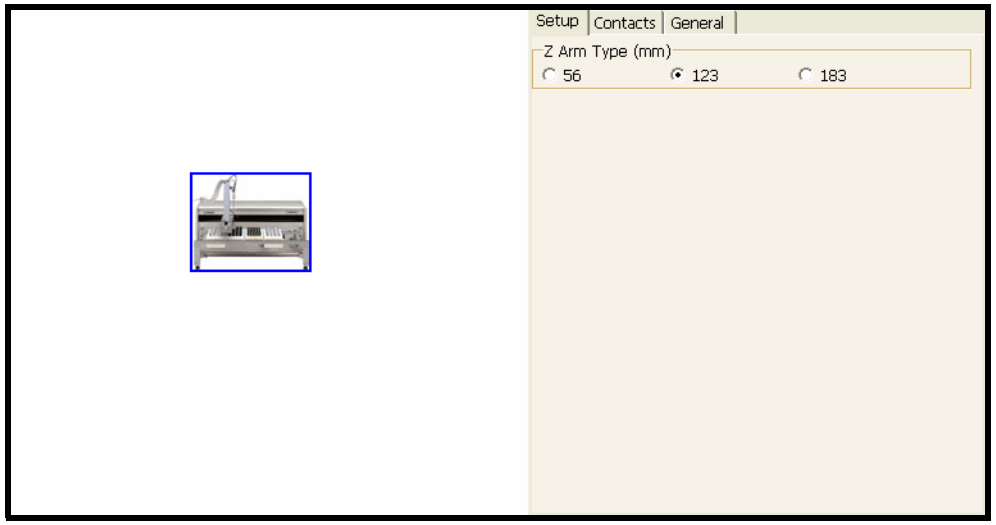
231 XL Sample Injector Properties Table *(Page 1 of 2)*

231 XL Sample Injector Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Instrument Name	The name that will be used to identify this instrument in a Task.	231 XL Sample Injector (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	10	0–31

231 XL Sample Injector Properties Table *(Page 2 of 2)*

232 XL Sample Injector



The 232 XL Sample Injector Properties Window

232 XL Sample Injector Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Z Arm Type (mm)	This is the height of the Z-arm installed on the liquid handler.	123	56, 123, 183
Contacts Output 1 Output 2 Output 3 Output 4 Output 5 Output 6 Output 7 Output 8 Input 1 Input 2 Input 3 Input 4 Input 5	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run.	N/A	N/A
Instrument Type	The Gilson-supplied name for the instrument.	232 XL Sample Injector	N/A

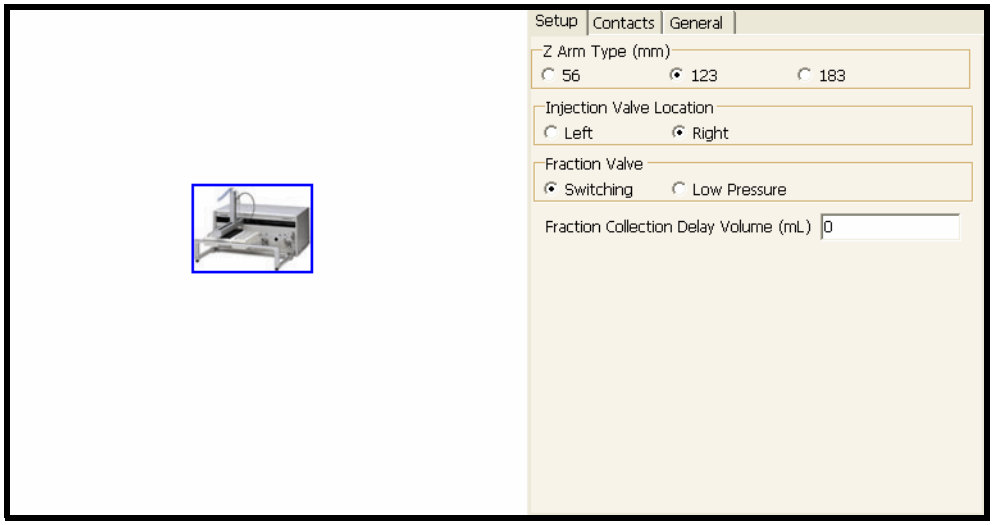
232 XL Sample Injector Properties Table *(Page 1 of 2)*

232 XL Sample Injector Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Instrument Name	The name that will be used to identify this instrument in a Task.	232 XL Sample Injector (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	10	0–31

232 XL Sample Injector Properties Table *(Page 2 of 2)*

233 XL Sample Injector



The 233 XL Sample Injector Properties Window

233 XL Sample Injector Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Z Arm Type (mm)	This is the height of the Z-arm installed on the liquid handler.	123	56, 123, 183
Injection Valve Location	The location of the installed injection valve.	Right	Left, Right

233 XL Sample Injector Properties Table *(Page 1 of 4)*

233 XL Sample Injector Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Fraction Valve	The type of fraction collection valve installed. The switching valve is built-in to the instrument. The low pressure valve is installed on the Z arm.	Switching	Switching, Low Pressure
Fraction Collection Delay Volume (mL)	The volume in the flow path between the detector flow cell and the inlet to the fraction collection valve. See **Calculating Fraction Collection Delay Volume** on page 4-119 for more information.	0	N/A

233 XL Sample Injector Properties Table *(Page 2 of 4)*

233 XL Sample Injector Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts Output 1 Output 2 Output 3 Output 4 Output 5 Output 6 Output 7 Output 8 Input 1 Input 2 Input 3 Input 4 Input 5	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run.	N/A	N/A
Instrument Type	The Gilson-supplied name for the instrument.	233 XL Sample Injector	N/A

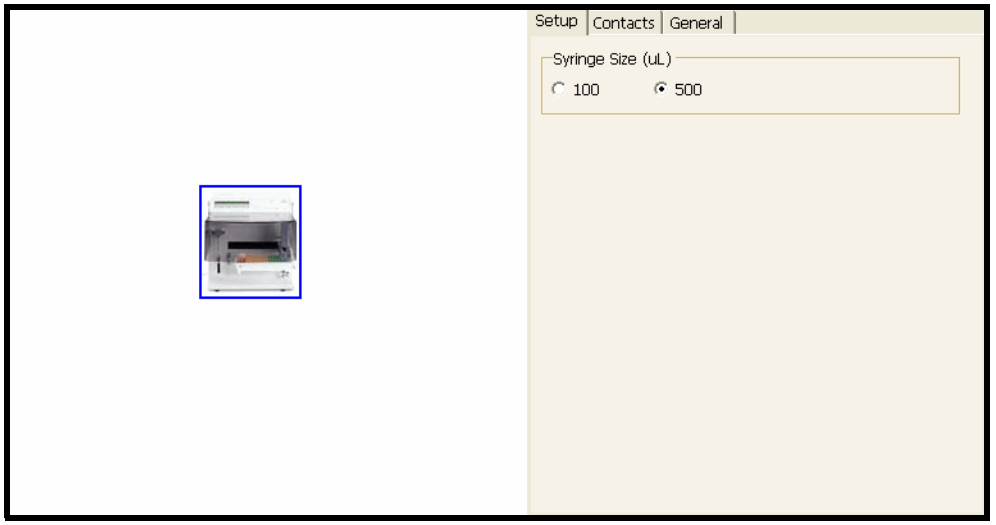
233 XL Sample Injector Properties Table *(Page 3 of 4)*

233 XL Sample Injector Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Instrument Name	The name that will be used to identify this instrument in a Task.	233 XL Sample Injector (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	10	0–31

233 XL Sample Injector Properties Table *(Page 4 of 4)*

234 Autoinjector



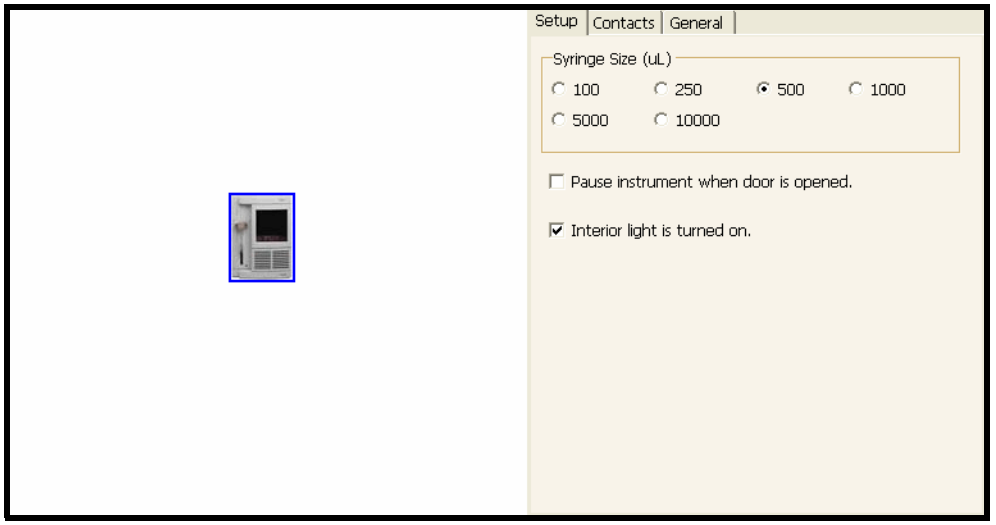
The 234 Autoinjector Properties Window

234 Autoinjector Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Syringe Size (µL)	The capacity of the installed syringe.	500	100, 500
Contacts Output 1 Output 2 Input A Input B Input C	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run.	N/A	N/A
Instrument Type	The Gilson-supplied name for the instrument.	234 Autoinjector	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	234 Autoinjector (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	10	0–63

234 Autoinjector Properties

235 Autoinjector



The 235 Autoinjector Properties Window

235 Autoinjector Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Syringe Size (µL)	The capacity of the installed syringe.	1000	100, 250, 500, 1000, 5000, 10000
Contacts Output 1 Output 2 Output 3 Output 4 Input A Input B Input C Input D	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run.	N/A	N/A
	Pause instrument when door is opened.	Cleared	
	Interior light is turned on.	Selected	
Instrument Type	The Gilson-supplied name for the instrument.	235 Autoinjector	N/A

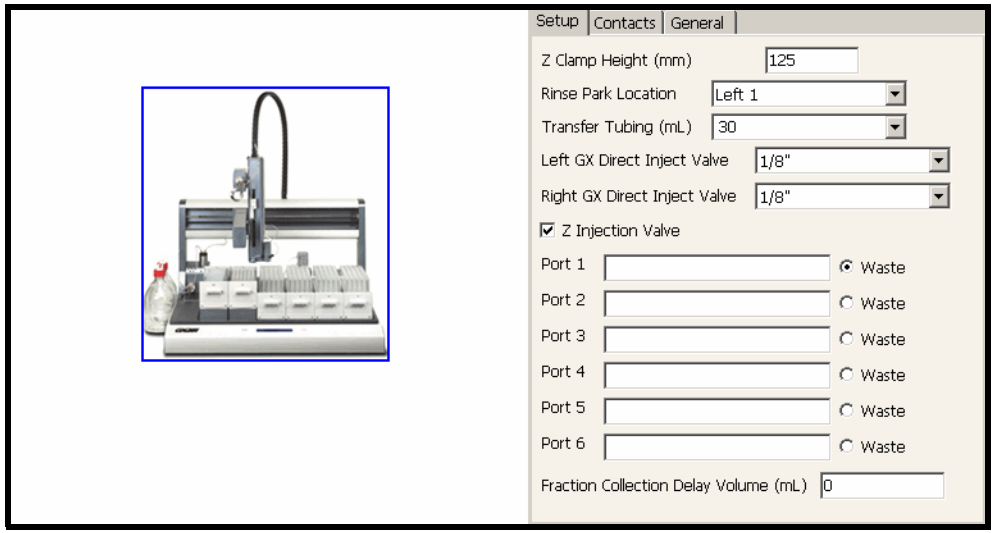
235 Autoinjector Properties Table *(Page 1 of 2)*

235 Autoinjector Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Instrument Name	The name that will be used to identify this instrument in a Task.	235 Autoinjector (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	20	20–29

235 Autoinjector Properties Table *(Page 2 of 2)*

GX-281 Liquid Handler



The GX-281 Liquid Handler Properties Window

GX-281 Liquid Handler Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	125	95–300
Rinse Park Location	The rinse location to where the instrument home completes.	Left 1	Left 1, Left 2, Left 3, Right 1, Right 2, Right 3
Transfer Tubing (mL)	The size of the tubing being used from pump to probe.	30	1.1, 3, 5, 10.5, 30, 50
Left GX Direct Inject Valve	Indicate the size of the valve installed in the left position.	1/8"	1/8", 1/16", Not Installed
Right GX Direct Inject Valve	Indicate the size of the valve installed in the rightmost position.	1/8"	1/8", 1/16", Not Installed
Z Injection Valve	Indicate whether (checked) or not (cleared) a Z Injection Valve is installed	Checked	

GX-281 Liquid Handler Properties Table *(Page 1 of 4)*

GX-281 Liquid Handler Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Port 1 Port 2 Port 3 Port 4 Port 5 Port 6	Optionally, type a description of the solvent valve port. A waste port must be identified. The Waste option button for Port 1 defaults selected.	N/A	N/A
Fraction Collection Delay Volume (mL)	The volume in the flow path between the detector flow cell and the inlet to the fraction collection valve. See **Calculating Fraction Collection Delay Volume** on page 4-119 for more information.	0	N/A

GX-281 Liquid Handler Properties Table *(Page 2 of 4)*

GX-281 Liquid Handler Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Output 1 Output 2 Output 3 Output 4	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run. Additionally, indicate whether the contact should open, close, or remain in the same state on error. The default is No Change.	N/A	N/A
24V Output 1 24V Output 2 24V Output 3 24V Output 4	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run. Additionally, indicate whether the contact should open, close, or remain in the same state on error. The default is Open.	N/A	N/A

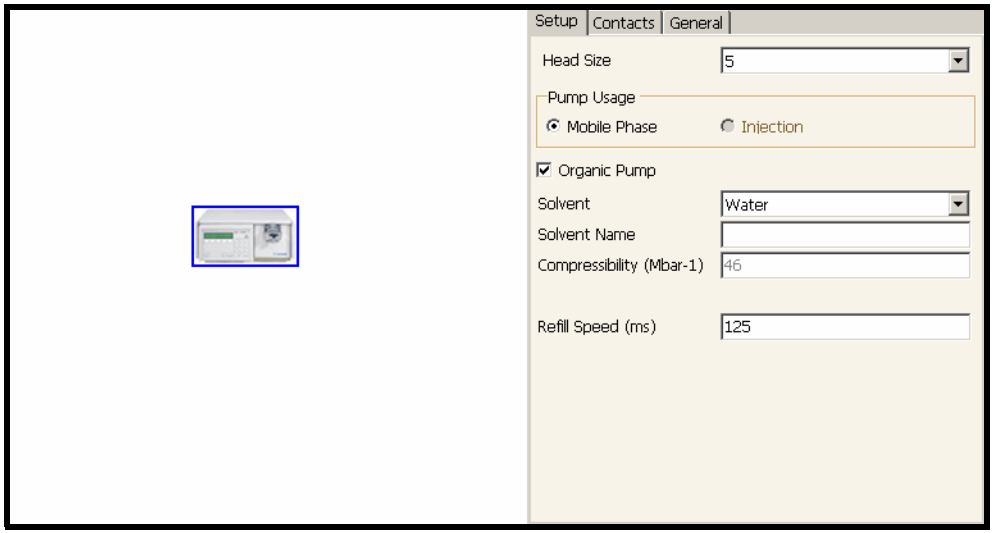
GX-281 Liquid Handler Properties Table *(Page 3 of 4)*

GX-281 Liquid Handler Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Input A Input B Input C Input D	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run.	N/A	N/A
Instrument Type	The Gilson-supplied name for the instrument.	GX-281 Liquid Handler	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	GX-281 Liquid Handler (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	25	20–29

GX-281 Liquid Handler Properties Table *(Page 4 of 4)*

305 Pump



The 305 Pump Properties Window

305 Pump Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Head Size	The size of the pump head fitted to the pump.	5	5, 10, 25, 50, 100, 200
Pump Usage	Indicate the function of the pump in the HPLC system.	Mobile Phase	Mobile Phase
Organic Pump	The pump, using any solvent, that is being ramped in gradient templates. One HPLC pump in each Configuration must be selected as “organic”.	N/A	N/A

305 Pump Properties Table *(Page 1 of 4)*

305 Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solvent	Identifies the solvent that will be delivered from the pump.	Water	Other Liquid, Water, Methanol, Acetonitrile, Tetrahydrofuran, Benzene, n-Hexane, Carbon Tetrachloride, Water-Methanol 10-90, Water-Methanol 20-80, Water-Methanol 40-60, Water-Methanol 50-50, Water-Methanol 60-40, Water-Methanol 80-20, Chloroform, Methylene Chloride, Ethanol, Acetone, n-Heptane, Diethyl Ether
Solvent Name	Type the name of the solvent to be delivered from the pump. Used only if Other Liquid is selected from the Solvent List.	Other Liquid	N/A

305 Pump Properties Table *(Page 2 of 4)*

305 Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Compressibility (Mbar-1)	A measure of how much the solvent being pumped can be compressed when placed under pressure. TRILUTION LC uses the compressibility setting to correct the flow characteristics of the system. See **Compressibility** on page 4-115 for compressibility values for some common mobile phases.	46	N/A
Refill Speed (ms)	The duration of one piston refill stroke. For analytical systems, a fast refill of 125 ms is appropriate. For preparative flows (>10 mL/min), use a value in the range of 125 to 400 ms. Slower speeds may be necessary when pumping viscous mobile phases.	125	125–999

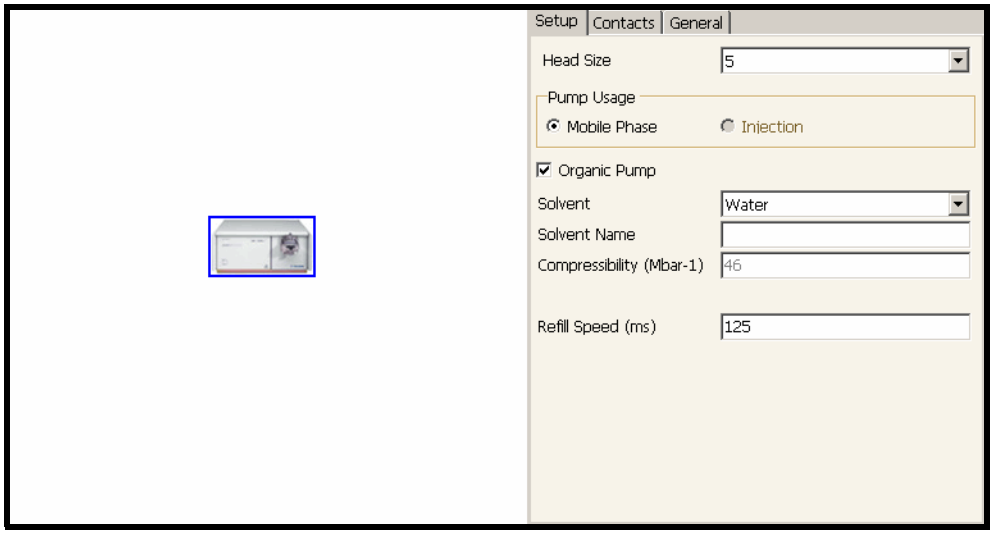
305 Pump Properties Table *(Page 3 of 4)*

305 Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts Output 1 Output 2 Output 3 Output High Output Low Input 1 Input 2	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run.	N/A	N/A
Instrument Type	The Gilson-supplied name for the instrument.	305 Pump	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	305 Pump (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	1	0–63

305 Pump Properties Table *(Page 4 of 4)*

306 Pump



The 306 Pump Properties Window

306 Pump Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Head Size	The size of the pump head fitted to the pump.	5	5, 10, 25, 50, 100, 200
Pump Usage	Indicate the function of the pump in the HPLC system.	Mobile Phase	Mobile Phase
Organic Pump	The pump, using any solvent, that is being ramped in gradient templates. One HPLC pump in each Configuration must be selected as “organic”.	N/A	N/A

306 Pump Properties Table *(Page 1 of 4)*

306 Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solvent	Identifies the solvent that will be delivered from the pump.	Water	Other Liquid, Water, Methanol, Acetonitrile, Tetrahydrofuran, Benzene, n-Hexane, Carbon Tetrachloride, Water-Methanol 10-90, Water-Methanol 20-80, Water-Methanol 40-60, Water-Methanol 50-50, Water-Methanol 60-40, Water-Methanol 80-20, Chloroform, Methylene Chloride, Ethanol, Acetone, n-Heptane, Diethyl Ether
Solvent Name	Type the name of the solvent to be delivered from the pump. Used only if Other Liquid is selected from the Solvent List.	Other Liquid	N/A

306 Pump Properties Table *(Page 2 of 4)*

306 Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Compressibility (Mbar-1)	A measure of how much the solvent being pumped can be compressed when placed under pressure. TRILUTION LC uses the compressibility setting to correct the flow characteristics of the system. See **Compressibility** on page 4-115 for compressibility values for some common mobile phases.	46	N/A
Refill Speed (ms)	The duration of one piston refill stroke. For analytical systems, a fast refill of 125 ms is appropriate. For preparative flows (>10 mL/min), use a value in the range of 125 to 400 ms. Slower speeds may be necessary when pumping viscous mobile phases.	125	125–999
Contacts Output High Output Low	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run.	N/A	N/A
Instrument Type	The Gilson-supplied name for the instrument.	306 Pump	N/A

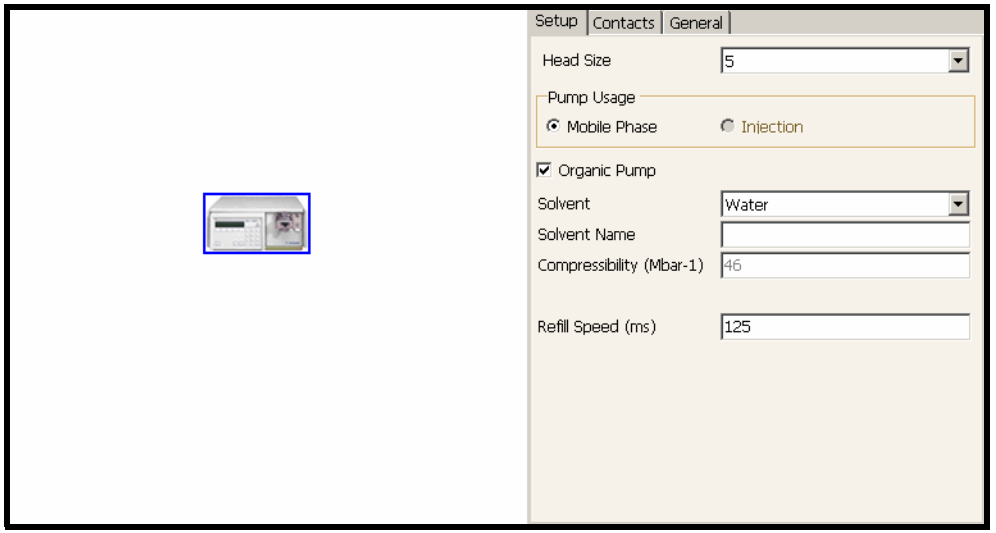
306 Pump Properties Table *(Page 3 of 4)*

306 Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Instrument Name	The name that will be used to identify this instrument in a Task.	306 Pump (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	1	0–63

306 Pump Properties Table ***(Page 4 of 4)***

307 Pump



The 307 Pump Properties Window

307 Pump Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Head Size	The size of the pump head fitted to the pump.	5	5, 10, 25, 50, 100, 200
Pump Usage	Indicate the function of the pump in the HPLC system.	Mobile Phase	Mobile Phase

307 Pump Properties Table *(Page 1 of 4)*

307 Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Organic Pump	The pump, using any solvent, that is being ramped in gradient templates. One HPLC pump in each Configuration must be selected as "organic".	N/A	N/A
Solvent	Identifies the solvent that will be delivered from the pump.	Water	Other Liquid, Water, Methanol, Acetonitrile, Tetrahydrofuran, Benzene, n-Hexane, Carbon Tetrachloride, Water-Methanol 10-90, Water-Methanol 20-80, Water-Methanol 40-60, Water-Methanol 50-50, Water-Methanol 60-40, Water-Methanol 80-20, Chloroform, Methylene Chloride, Ethanol, Acetone, n-Heptane, Diethyl Ether
Solvent Name	Type the name of the solvent to be delivered from the pump. Used only if Other Liquid is selected from the Solvent List.	Other Liquid	N/A

307 Pump Properties Table *(Page 2 of 4)*

307 Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Compressibility (Mbar-1)	A measure of how much the solvent being pumped can be compressed when placed under pressure. TRILUTION LC uses the compressibility setting to correct the flow characteristics of the system. See **Compressibility** on page 4-115 for compressibility values for some common mobile phases.	46	N/A
Refill Speed (ms)	The duration of one piston refill stroke. For analytical systems, a fast refill of 125 ms is appropriate. For preparative flows (>10 mL/min), use a value in the range of 125 to 400 ms. Slower speeds may be necessary when pumping viscous mobile phases.	125	125–999

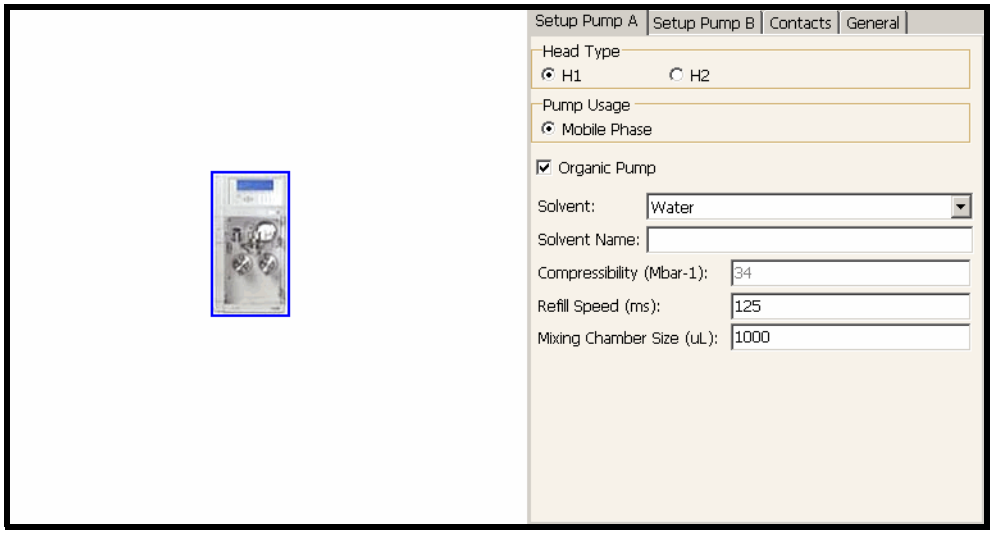
307 Pump Properties Table *(Page 3 of 4)*

307 Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts Output 1 Output 2 Output 3 Output 4 Input 1 Input 2	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run.	N/A	N/A
Instrument Type	The Gilson-supplied name for the instrument.	307 Pump	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	307 Pump (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	1	0–63

307 Pump Properties Table *(Page 4 of 4)*

321 HPLC Pump



The 321 HPLC Pump Properties Window

321 HPLC Pump Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Head Type	The type of pump head fitted to the pump.	H1	H1, H2
Pump Usage	Indicate the function of the pump in the HPLC system.	Mobile Phase	Mobile Phase
Organic Pump	The pump that is being ramped in gradient templates. One HPLC pump in each Configuration must be selected as organic.	N/A	N/A

321 HPLC Pump Properties Table *(Page 1 of 5)*

321 HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solvent	Identifies the solvent that will be delivered from the pump.	Water	Other Liquid, Water, Methanol, Acetonitrile, Tetrahydrofuran, Isopropanol, Hexane, Dichloromethane, Water-Acetonitrile 10-90, Water-Acetonitrile 20-80, Water-Acetonitrile 30-70, Water-Acetonitrile 40-60, Water-Acetonitrile 50-50, Water-Acetonitrile 60-40, Water-Acetonitrile 70-30, Water-Acetonitrile 80-20, Water-Acetonitrile 90-10, Water-Methanol 10-90, Water-Methanol 20-80, Water-Methanol 30-70, Water-Methanol 40-60, Water-Methanol 50-50, Water-Methanol 60-40, Water-Methanol 70-30, Water-Methanol 80-20, Water-Methanol 90-10

321 HPLC Pump Properties Table *(Page 2 of 5)*

321 HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solvent Name	Type the name of the solvent to be delivered from the pump. Used only if Other Liquid is selected from the Solvent List.	Other Liquid	N/A
Compressibility (Mbar-1)	A measure of how much the solvent being pumped can be compressed when placed under pressure. TRILUTION LC uses the compressibility setting to correct the flow characteristics of the system. See **Compressibility** on page 4-115 for compressibility values for some common mobile phases.	34	N/A
Refill Speed (ms)	The duration of one piston refill stroke. For analytical systems, a fast refill of 125 ms is appropriate. For preparative flows (>10 mL/min), use a value in the range of 125 to 400 ms. Slower speeds may be necessary when pumping viscous mobile phases.	125	125–999
Mixing Chamber Size (uL)	Physical volume setting for the dynamic mixer.	1000	200–2200

321 HPLC Pump Properties Table *(Page 3 of 5)*

321 HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solvent Valve Configuration	Indicate whether or not a Solvent Selection Valve Block is installed and will be used.	No Solvent Valve	No Solvent Valve, Solvent Valve
Solvent Selection Valve	Sets the solvent valve position. The valve position cannot be switched during a run. Used only if Solvent Valve is selected from for the Solvent Valve Configuration.	B1	B1, B2, B3, B4
Contacts Output 1 Output 2 Output 3 Output 4 Input 1 Input 2	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run.	N/A	N/A
Instrument Type	The Gilson-supplied name for the instrument.	321 HPLC Pump	N/A

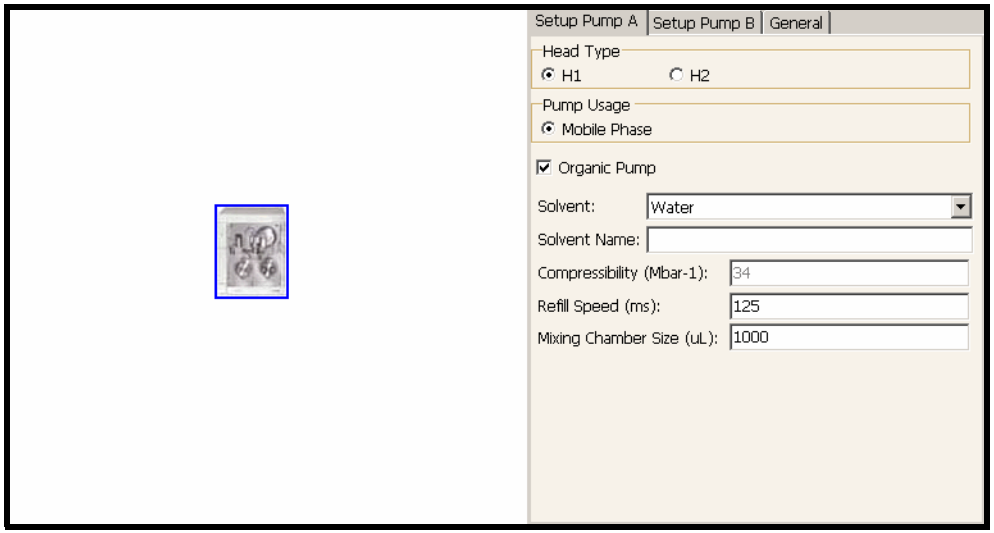
321 HPLC Pump Properties Table *(Page 4 of 5)*

321 HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Instrument Name	The name that will be used to identify this instrument in a Task.	321 HPLC Pump (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	1	0–63

321 HPLC Pump Properties Table *(Page 5 of 5)*

322 HPLC Pump



The 322 HPLC Pump Properties Window

322 HPLC Pump Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Head Type	The type of pump head fitted to the pump.	H1	H1, H2
Pump Usage	Indicate the function of the pump in the HPLC system.	Mobile Phase	Mobile Phase
Organic Pump	The pump that is being ramped in gradient templates. One HPLC pump in each Configuration must be selected as organic.	N/A	N/A

322 HPLC Pump Properties Table *(Page 1 of 4)*

322 HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solvent	Identifies the solvent that will be delivered from the pump.	Water	Other Liquid, Water, Methanol, Acetonitrile, Tetrahydrofuran, Isopropanol, Hexane, Dichloromethane, Water-Acetonitrile 10-90, Water-Acetonitrile 20-80, Water-Acetonitrile 30-70, Water-Acetonitrile 40-60, Water-Acetonitrile 50-50, Water-Acetonitrile 60-40, Water-Acetonitrile 70-30, Water-Acetonitrile 80-20, Water-Acetonitrile 90-10, Water-Methanol 10-90, Water-Methanol 20-80, Water-Methanol 30-70, Water-Methanol 40-60, Water-Methanol 50-50, Water-Methanol 60-40, Water-Methanol 70-30, Water-Methanol 80-20, Water-Methanol 90-10

322 HPLC Pump Properties Table *(Page 2 of 4)*

322 HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solvent Name	Type the name of the solvent to be delivered from the pump. Used only if Other Liquid is selected from the Solvent List.	Other Liquid	N/A
Compressibility (Mbar-1)	A measure of how much the solvent being pumped can be compressed when placed under pressure. TRILUTION LC uses the compressibility setting to correct the flow characteristics of the system. See **Compressibility** on page 4-115 for compressibility values for some common mobile phases.	34	
Refill Speed (ms)	The duration of one piston refill stroke. For analytical systems, a fast refill of 125 ms is appropriate. For preparative flows (>10 mL/min), use a value in the range of 125 to 400 ms. Slower speeds may be necessary when pumping viscous mobile phases.	125	125–999
Mixing Chamber Size (uL)	Physical volume setting for the dynamic mixer.	1000	200–2200

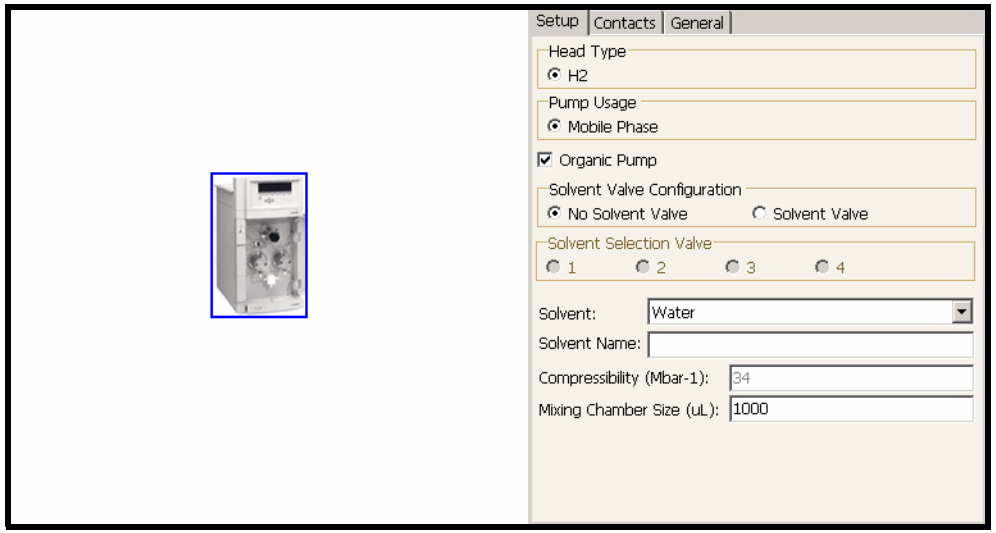
322 HPLC Pump Properties Table *(Page 3 of 4)*

322 HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solvent Valve Configuration	Indicate whether or not a Solvent Selection Valve Block is installed and will be used.	No Solvent Valve	No Solvent Valve, Solvent Valve
Solvent Selection Valve	Sets the solvent valve position. The valve position cannot be switched during a run. Used only if Solvent Valve is selected from for the Solvent Valve Configuration.	B1	B1, B2, B3, B4
Instrument Type	The Gilson-supplied name for the instrument.	322 HPLC Pump	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	322 HPLC Pump (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	1	0–9

322 HPLC Pump Properties Table *(Page 4 of 4)*

331 Prep-Scale HPLC Pump



The 331 Prep-Scale HPLC Pump Properties Window

331 Prep-Scale HPLC Pump Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Head Type	The type of pump head fitted to the pump.	H2	H2
Pump Usage	Indicate the function of the pump in the HPLC system.	Mobile Phase	Mobile Phase

331 Prep-Scale HPLC Pump Properties Table *(Page 1 of 5)*

331 Prep-Scale HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Organic Pump	The pump, using any solvent, that is being ramped in gradient templates. One HPLC pump in each Configuration must be selected as “organic”.	N/A	N/A
Solvent Valve Configuration	Indicate whether or not a Solvent Selection Valve Block is installed and will be used.	No Solvent Valve	No Solvent Valve, Solvent Valve
Solvent Selection Valve	Sets the solvent valve position. The valve position cannot be switched during a run. Used only if Solvent Valve is selected from for the Solvent Valve Configuration.	1	1, 2, 3, 4

331 Prep-Scale HPLC Pump Properties Table *(Page 2 of 5)*

331 Prep-Scale HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solvent	Identifies the solvent that will be delivered from the pump.	Water	Other Liquid, Water, Methanol, Acetonitrile, Tetrahydrofuran, Isopropanol, Hexane, Dichloromethane, Water-Acetonitrile 10-90, Water-Acetonitrile 20-80, Water-Acetonitrile 30-70, Water-Acetonitrile 40-60, Water-Acetonitrile 50-50, Water-Acetonitrile 60-40, Water-Acetonitrile 70-30, Water-Acetonitrile 80-20, Water-Acetonitrile 90-10, Water-Methanol 10-90, Water-Methanol 20-80, Water-Methanol 30-70, Water-Methanol 40-60, Water-Methanol 50-50, Water-Methanol 60-40, Water-Methanol 70-30, Water-Methanol 80-20, Water-Methanol 90-10

331 Prep-Scale HPLC Pump Properties Table *(Page 3 of 5)*

331 Prep-Scale HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solvent Name	Type the name of the solvent to be delivered from the pump. Used only if Other Liquid is selected from the Solvent List.	Other Liquid	N/A
Compressibility (Mbar-1)	A measure of how much the solvent being pumped can be compressed when placed under pressure. TRILUTION LC uses the compressibility setting to correct the flow characteristics of the system. See **Compressibility** on page 4-115 for compressibility values for some common mobile phases.	34	N/A
Mixing Chamber Size (uL)	Physical volume setting for the dynamic mixer.	1000	200–2200

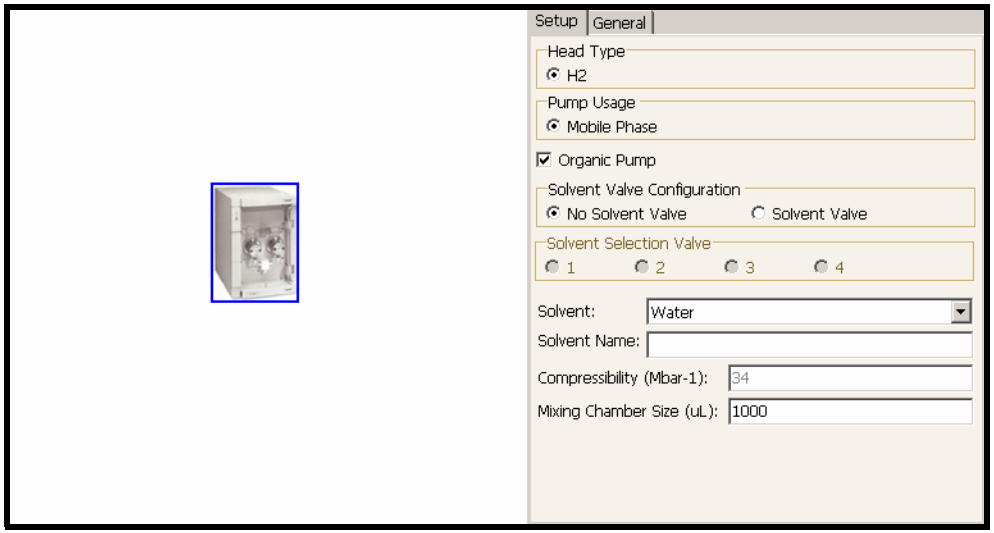
331 Prep-Scale HPLC Pump Properties Table *(Page 4 of 5)*

331 Prep-Scale HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts Output 1 Output 2 Output 3 Output 4 Input 1 Input 2	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run.	N/A	N/A
Instrument Type	The Gilson-supplied name for the instrument.	331 Prep-Scale HPLC Pump	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	331 Prep-Scale HPLC Pump (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	1	0–63

331 Prep-Scale HPLC Pump Properties Table *(Page 5 of 5)*

332 Prep-Scale HPLC Pump



The 332 Prep-Scale HPLC Pump Properties Window

332 Prep-Scale HPLC Pump Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Head Type	The type of pump head fitted to the pump.	H2	H2
Pump Usage	Indicate the function of the pump in the HPLC system.	Mobile Phase	Mobile Phase

332 Prep-Scale HPLC Pump Properties Table *(Page 1 of 5)*

332 Prep-Scale HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Organic Pump	The pump, using any solvent, that is being ramped in gradient templates. One HPLC pump in each Configuration must be selected as "organic".	N/A	N/A
Solvent Valve Configuration	Indicate whether or not a Solvent Selection Valve Block is installed and will be used.	No Solvent Valve	No Solvent Valve, Solvent Valve
Solvent Selection Valve	Sets the solvent valve position. The valve position cannot be switched during a run. Used only if Solvent Valve is selected from for the Solvent Valve Configuration.	1	1, 2, 3, 4

332 Prep-Scale HPLC Pump Properties Table *(Page 2 of 5)*

332 Prep-Scale HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solvent	Identifies the solvent that will be delivered from the pump.	Water	Other Liquid, Water, Methanol, Acetonitrile, Tetrahydrofuran, Isopropanol, Hexane, Dichloromethane, Water-Acetonitrile 10-90, Water-Acetonitrile 20-80, Water-Acetonitrile 30-70, Water-Acetonitrile 40-60, Water-Acetonitrile 50-50, Water-Acetonitrile 60-40, Water-Acetonitrile 70-30, Water-Acetonitrile 80-20, Water-Acetonitrile 90-10, Water-Methanol 10-90, Water-Methanol 20-80, Water-Methanol 30-70, Water-Methanol 40-60, Water-Methanol 50-50, Water-Methanol 60-40, Water-Methanol 70-30, Water-Methanol 80-20, Water-Methanol 90-10

332 Prep-Scale HPLC Pump Properties Table *(Page 3 of 5)*

332 Prep-Scale HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solvent Name	Type the name of the solvent to be delivered from the pump. Used only if Other Liquid is selected from the Solvent List.	Other Liquid	N/A
Compressibility (Mbar-1)	A measure of how much the solvent being pumped can be compressed when placed under pressure. TRILUTION LC uses the compressibility setting to correct the flow characteristics of the system. See **Compressibility** on page 4-115 for compressibility values for some common mobile phases.	34	N/A

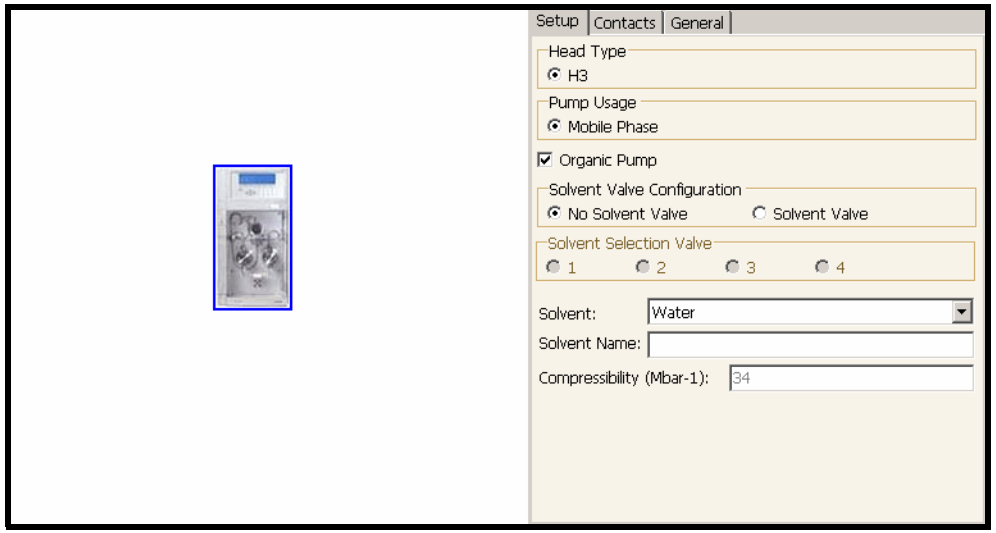
332 Prep-Scale HPLC Pump Properties Table *(Page 4 of 5)*

332 Prep-Scale HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Mixing Chamber Size (uL)	Physical volume setting for the dynamic mixer.	1000	200–2200
Instrument Type	The Gilson-supplied name for the instrument.	332 Prep-Scale HPLC Pump	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	332 Prep-Scale HPLC Pump (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	2	0–9

332 Prep-Scale HPLC Pump Properties Table *(Page 5 of 5)*

333 Prep-Scale HPLC Pump



The 333 Prep-Scale HPLC Pump Properties Window

333 Prep-Scale HPLC Pump Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Head Type	The type of pump head fitted to the pump.	H3	H3
Pump Usage	Indicate the function of the pump in the HPLC system.	Mobile Phase	Mobile Phase

333 Prep-Scale HPLC Pump Properties Table *(Page 1 of 5)*

333 Prep-Scale HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Organic Pump	The pump, using any solvent, that is being ramped in gradient templates. One HPLC pump in each Configuration must be selected as “organic”.	N/A	N/A
Solvent Valve Configuration	Indicate whether or not a Solvent Selection Valve Block is installed and will be used.	No Solvent Valve	No Solvent Valve, Solvent Valve
Solvent Selection Valve	Sets the solvent valve position. The valve position cannot be switched during a run. Used only if Solvent Valve is selected from for the Solvent Valve Configuration.	1	1, 2, 3, 4

333 Prep-Scale HPLC Pump Properties Table *(Page 2 of 5)*

333 Prep-Scale HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solvent	Identifies the solvent that will be delivered from the pump.	Water	Other Liquid, Water, Methanol, Acetonitrile, Tetrahydrofuran, Isopropanol, Hexane, Dichloromethane, Water-Acetonitrile 10-90, Water-Acetonitrile 20-80, Water-Acetonitrile 30-70, Water-Acetonitrile 40-60, Water-Acetonitrile 50-50, Water-Acetonitrile 60-40, Water-Acetonitrile 70-30, Water-Acetonitrile 80-20, Water-Acetonitrile 90-10, Water-Methanol 10-90, Water-Methanol 20-80, Water-Methanol 30-70, Water-Methanol 40-60, Water-Methanol 50-50, Water-Methanol 60-40, Water-Methanol 70-30, Water-Methanol 80-20, Water-Methanol 90-10

333 Prep-Scale HPLC Pump Properties Table *(Page 3 of 5)*

333 Prep-Scale HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solvent Name	Type the name of the solvent to be delivered from the pump. Used only if Other Liquid is selected from the Solvent List.	Other Liquid	N/A
Compressibility (Mbar-1)	A measure of how much the solvent being pumped can be compressed when placed under pressure. TRILUTION LC uses the compressibility setting to correct the flow characteristics of the system. See **Compressibility** on page 4-115 for compressibility values for some common mobile phases.	34	N/A

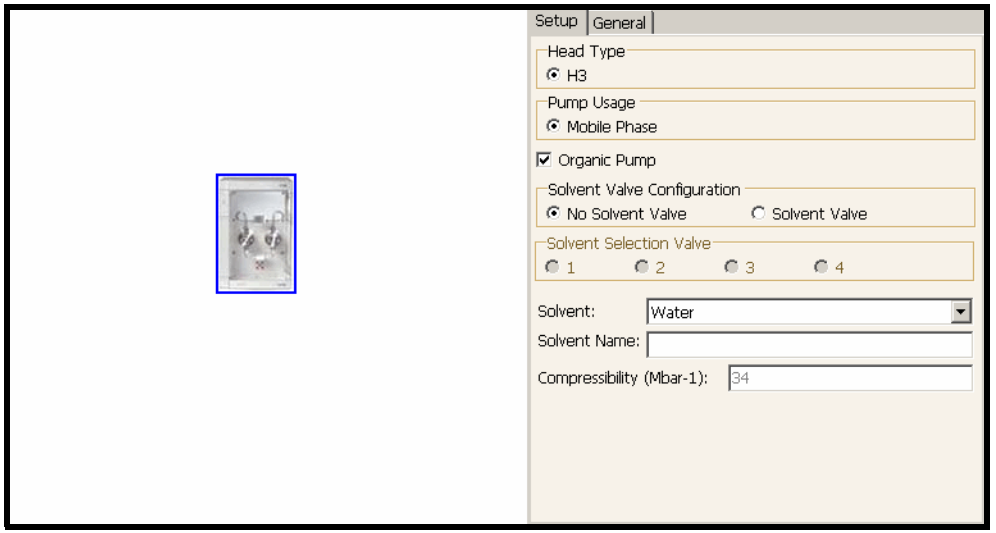
333 Prep-Scale HPLC Pump Properties Table *(Page 4 of 5)*

333 Prep-Scale HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts Output 1 Output 2 Output 3 Output 4 Input 1 Input 2	Optionally, type a description for the contact. This description and the contact's status will be displayed at all times in the status box during an Application Run.	N/A	N/A
Instrument Type	The Gilson-supplied name for the instrument.	333 Prep-Scale HPLC Pump	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	333 Prep-Scale HPLC Pump (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	1	0–63

333 Prep-Scale HPLC Pump Properties Table *(Page 5 of 5)*

334 Prep-Scale HPLC Pump



The 334 Prep-Scale HPLC Pump Properties Window

334 Prep-Scale HPLC Pump Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Head Type	The type of pump head fitted to the pump.	H3	H3
Pump Usage	Indicate the function of the pump in the HPLC system.	Mobile Phase	Mobile Phase

334 Prep-Scale HPLC Pump Properties Table *(Page 1 of 5)*

334 Prep-Scale HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Organic Pump	The pump, using any solvent, that is being ramped in gradient templates. One HPLC pump in each Configuration must be selected as “organic”.	N/A	N/A
Solvent Valve Configuration	Indicate whether or not a Solvent Selection Valve Block is installed and will be used.	No Solvent Valve	No Solvent Valve, Solvent Valve
Solvent Selection Valve	Sets the solvent valve position. The valve position cannot be switched during a run. Used only if Solvent Valve is selected from for the Solvent Valve Configuration.	1	1, 2, 3, 4

334 Prep-Scale HPLC Pump Properties Table *(Page 2 of 5)*

334 Prep-Scale HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solvent	Identifies the solvent that will be delivered from the pump.	Water	Other Liquid, Water, Methanol, Acetonitrile, Tetrahydrofuran, Isopropanol, Hexane, Dichloromethane, Water-Acetonitrile 10-90, Water-Acetonitrile 20-80, Water-Acetonitrile 30-70, Water-Acetonitrile 40-60, Water-Acetonitrile 50-50, Water-Acetonitrile 60-40, Water-Acetonitrile 70-30, Water-Acetonitrile 80-20, Water-Acetonitrile 90-10, Water-Methanol 10-90, Water-Methanol 20-80, Water-Methanol 30-70, Water-Methanol 40-60, Water-Methanol 50-50, Water-Methanol 60-40, Water-Methanol 70-30, Water-Methanol 80-20, Water-Methanol 90-10

334 Prep-Scale HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solvent Name	Type the name of the solvent to be delivered from the pump. Used only if Other Liquid is selected from the Solvent List.	Other Liquid	N/A
Compressibility (Mbar-1)	A measure of how much the solvent being pumped can be compressed when placed under pressure. TRILUTION LC uses the compressibility setting to correct the flow characteristics of the system. See **Compressibility** on page 4-115 for compressibility values for some common mobile phases.	34	N/A
Instrument Type	The Gilson-supplied name for the instrument.	334 Prep-Scale HPLC Pump	N/A

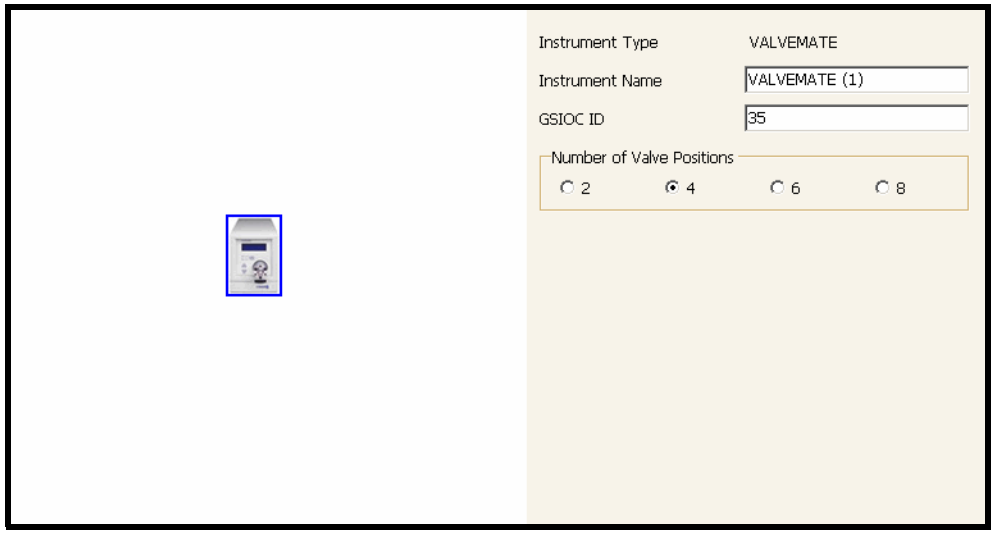
334 Prep-Scale HPLC Pump Properties Table *(Page 4 of 5)*

334 Prep-Scale HPLC Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Instrument Name	The name that will be used to identify this instrument in a Task.	334 Prep-Scale HPLC Pump (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	2	0–9

334 Prep-Scale HPLC Pump Properties Table *(Page 5 of 5)*

VALVEMATE



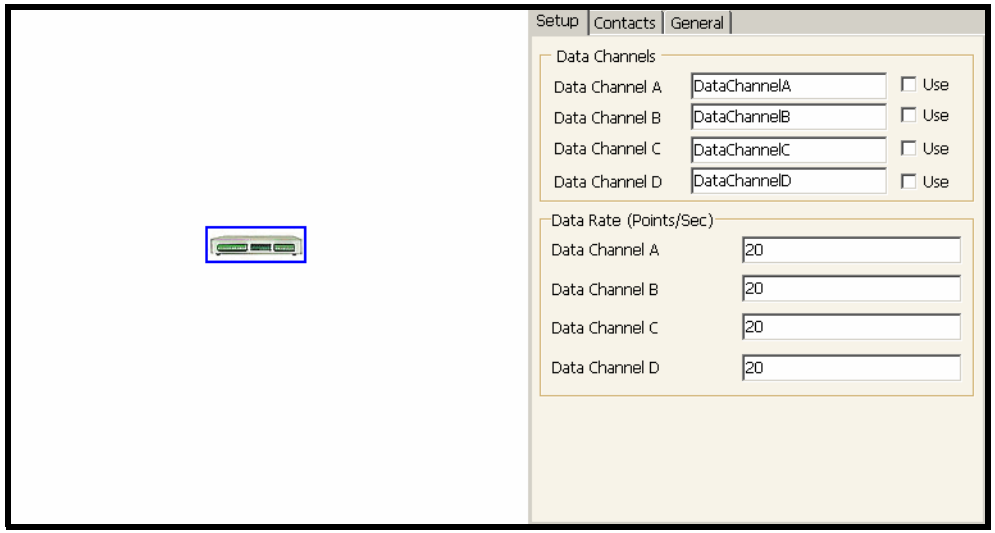
The VALVEMATE Properties Window

VALVEMATE Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Instrument Type	The Gilson-supplied name for the instrument.	VALVEMATE	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	VALVEMATE (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	35	30–44
Number of Valve Positions	The number of ports in the VALVEMATE valve.	4	2, 4, 6, 8

VALVEMATE Properties

506C System Interface



The 506C System Interface Properties Window

506C System Interface Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Data Channels Data Channel A Data Channel B Data Channel C Data Channel D	Optionally, type a description for each data channel. This description and the data channel's signal will be displayed at all times in the status box during an Application Run if the Use check box is selected for that data channel.	DataChannelA DataChannelB DataChannelC DataChannelD	N/A
Data Rate (Points/Sec) Data Channel A Data Channel B Data Channel C Data Channel D	The number of data points collected per second for the channel.	20	1–80

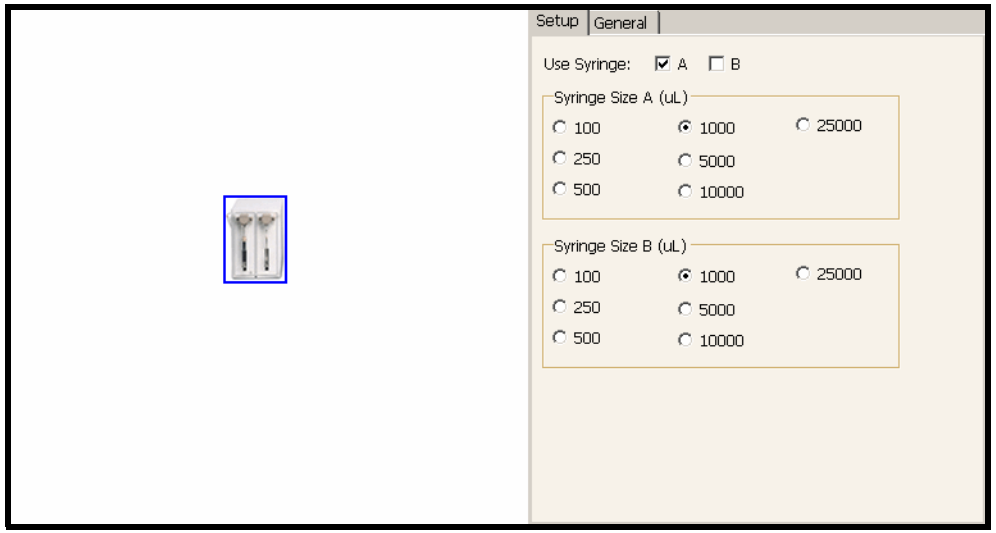
506C System Interface Properties Table *(Page 1 of 2)*

506C System Interface Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts Output 1 Output 2 Output 3 Output 4 Output 5 Input A Input B Input C Input D	Optionally, type a description for the contacts. This description and the contacts' status will be displayed at all times in the status box during an Application Run.	N/A	N/A
Instrument Type	The Gilson-supplied name for the instrument.	506C System Interface	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	506C System Interface (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	63	0–63

506C System Interface Properties Table *(Page 2 of 2)*

402 Pump Dual



The 402 Pump Dual Properties Window

402 Pump Dual Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Use Syringe	The syringe that will be used when this instrument is selected as the Pump or Dilutor in a Task.	A	A or B
Syringe Size A (µL)	The capacity of the installed syringe A.	1000	100, 250, 500, 1000, 5000, 10000, 25000

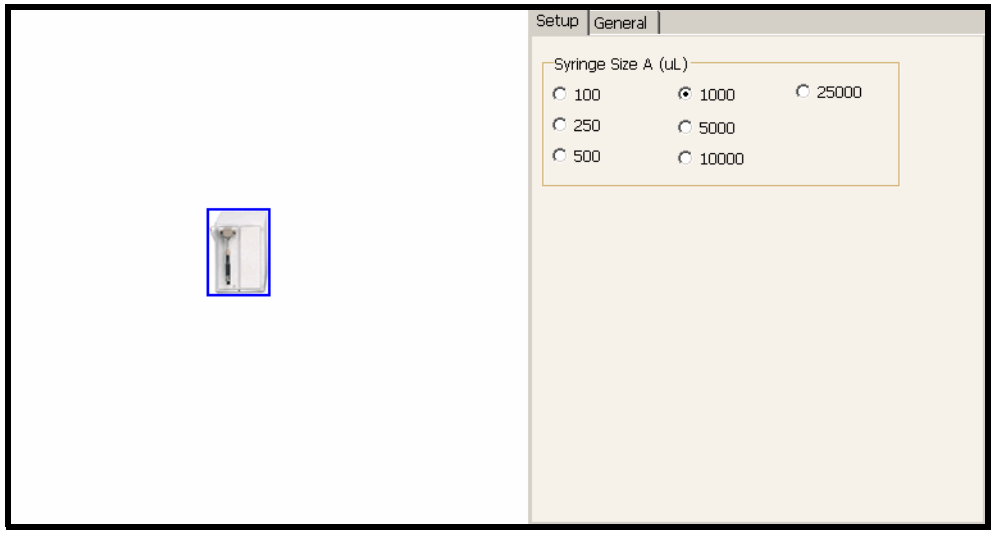
402 Pump Dual Properties Table *(Page 1 of 2)*

402 Pump Dual Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Syringe Size B (µL)	The capacity of the installed syringe B.	1000	100, 250, 500, 1000, 5000, 10000, 25000
Instrument Type	The Gilson-supplied name for the instrument.	402 Pump Dual	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	402 Pump Dual (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	0	0–31

402 Pump Dual Properties Table *(Page 2 of 2)*

402 Pump Single



The 402 Pump Single Properties Window

402 Pump Single Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Syringe Size A (µL)	The capacity of the installed syringe.	1000	100, 250, 500, 1000, 5000, 10000, 25000
Instrument Type	The Gilson-supplied name for the instrument.	402 Pump Single	N/A

402 Pump Single Properties Table *(Page 1 of 2)*

402 Pump Single Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Instrument Name	The name that will be used to identify this instrument in a Task.	402 Pump Single (1)	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	0	0–31

402 Pump Single Properties Table *(Page 2 of 2)*

Compressibility

The following table provides the compressibility values for some common mobile phases.

Solvent	Instrument			
	30x-Series Pumps		32x- and 33x-Series Pumps	
	Temperature (°C)	Compressibility	Temperature (°C)	Compressibility
Water	20 25 30 40	46 46 45 45	20–23°C	34
Methanol	20 25 30 40	121–123 125–127 129–130 138	20–23°C	162
Benzene	20 25 30 40	94–95 96–97 101–103 110	20–23°C	
Chloroform	20 25 30 40	97–101 97 108–110 118–119	20–23°C	204
Methylene Chloride	25	97	20–23°C	

Compressibility Table *(Page 1 of 4)*

Solvent	Instrument			
	30x-Series Pumps		32x- and 33x-Series Pumps	
	Temperature (°C)	Compressibility	Temperature (°C)	Compressibility
Carbon Tetrachloride	20 25 30 40	103–105 106–108 112–113 120–122	20–23°C	
Ethanol	20 25 30 40	110–112 114–116 118–119 126–127	20–23°C	148
Acetone	20 25 30 40	126–127 124 133 144–156	20–23°C	
n-Heptane	20 25 30 40	140–145 142–149 150–155 160	20–23°C	270
n-Hexane	20 25 30 40	150–165 161–171 165–180 183	20–23°C	290
Dichloromethane			20–23°C	200

Compressibility Table *(Page 2 of 4)*

Solvent	Instrument			
	30x-Series Pumps		32x- and 33x-Series Pumps	
	Temperature (°C)	Compressibility	Temperature (°C)	Compressibility
Diethyl Ether	20 25 30	184–187 195–200 208–209	20–23°C	
Acetonitrile		99	20–23°C	180
Tetrahydrofuran		93	20–23°C	150
Isopropanol			20–23°C	162
Water-Methanol, 10-90		117	20–23°C	130
Water-Methanol, 20-80		86	20–23°C	110
Water-Methanol, 30-70			20–23°C	92
Water-Methanol, 40-60		56	20–23°C	73
Water-Methanol, 50-50		52	20–23°C	55
Water-Methanol, 60-40		46	20–23°C	46
Water-Methanol, 70-30			20–23°C	43
Water-Methanol, 80-20		40	20–23°C	40
Water-Methanol, 90-10			20–23°C	37

Compressibility Table *(Page 3 of 4)*

Solvent	Instrument			
	30x-Series Pumps		32x- and 33x-Series Pumps	
	Temperature (°C)	Compressibility	Temperature (°C)	Compressibility
Water-Acetonitrile, 10-90			20–23°C	146
Water-Acetonitrile, 20-80			20–23°C	123
Water-Acetonitrile, 30-70			20–23°C	103
Water-Acetonitrile, 40-60			20–23°C	82
Water-Acetonitrile, 50-50			20–23°C	62
Water-Acetonitrile, 60-40			20–23°C	52
Water-Acetonitrile, 70-30			20–23°C	48
Water-Acetonitrile, 80-20			20–23°C	42
Water-Acetonitrile, 90-10			20–23°C	36

Compressibility Table ***(Page 4 of 4)***

Calculating Fraction Collection Delay Volume

To calculate the fraction delay volume to enter into TRILUTION:

1 Measure the length of tubing between the tip of the fraction collector dispensing needle and the detector's flow cell **or** for an injector/fraction collector, measure the length of tubing between the detector's flow cell and the inlet to the valve.

   Note: If using a Fraction Collection System with multiple fraction collectors, measure the length of tubing between the detector flow cell and the VALVEMATE and also the length of tubing between the VALVEMATE and the inlet to the fraction collection valve for each fraction collector in the Fraction Collection System.

2 In the table following, find the diameter of the tubing and locate its associated volume.

3 Multiply the length of tubing from step 1 by the volume from step 2.

4 Convert the results to milliliters by dividing it by 1000.

5 Enter the final value in TRILUTION.

Calculating Delay Volume

Tubing ID		*Volume*		
Inches	*Millimeters*	*Microns*	*Volume µL/in*	*Volume µL/cm*
0.001"	0.025 mm	25 µm	0.013 µL/in	0.005 µL/cm
0.002"	0.051 mm	51 µm	0.051 µL/in	0.020 µL/cm
0.003"	0.076 mm	76 µm	0.114 µL/in	0.045 µL/cm
0.004"	0.102 mm	102 µm	0.206 µL/in	0.081 µL/cm
0.005"	0.127 mm	127 µm	0.323 µL/in	0.127 µL/cm
0.006"	0.152 mm	152 µm	0.460 µL/in	0.181 µL/cm
0.007"	0.178 mm	178 µm	0.632 µL/in	0.249 µL/cm
0.008"	0.203 mm	203 µm	0.820 µL/in	0.323 µL/cm
0.009"	0.229 mm	229 µm	1.046 µL/in	0.412 µL/cm
0.010"	0.254 mm	254 µm	1.288 µL/in	0.507 µL/cm
0.011"	0.279 mm	279 µm	1.552 µL/in	0.611 µL/cm
0.012"	0.305 mm	305 µm	1.854 µL/in	0.730 µL/cm
0.013"	0.330 mm	330 µm	2.172 µL/in	0.855 µL/cm
0.014"	0.357 mm	357 µm	2.540 µL/in	1.000 µL/cm
0.015"	0.381 mm	381 µm	2.896 µL/in	1.140 µL/cm
0.016"	0.406 mm	406 µm	3.287 µL/in	1.294 µL/cm

Calculating Delay Volume Table *(Page 1 of 2)*

Calculating Delay Volume (Continued)

Tubing ID		*Volume*		
0.017"	0.432 mm	432 µm	3.721 µL/in	1.465 µL/cm
0.018"	0.457 mm	457 µm	4.163 µL/in	1.639 µL/cm
0.019"	0.483 mm	483 µm	4.650 µL/in	1.831 µL/cm
0.020"	0.508 mm	508 µm	5.146 µL/in	2.026 µL/cm
0.030"	0.762 mm	762 µm	11.577 µL/in	4.558 µL/cm
0.040"	1.016 mm	1016 µm	20.581 µL/in	8.103 µL/cm
0.050"	1.270 mm	1270 µm	32.160 µL/in	12.660 µL/cm

Calculating Delay Volume Table *(Page 2 of 2)*

Modifying a Configuration

You can modify a Configuration by doing the following:

- Adding new instruments to an existing Configuration.
- Deleting instruments from an existing Configuration.
- Modifying the instrument properties of the instruments in a Configuration.

When you right-click on an instrument in the Workspace, a menu is displayed with the option to delete the instrument.

You can delete selected instruments in the workspace by pressing the **DELETE** key.

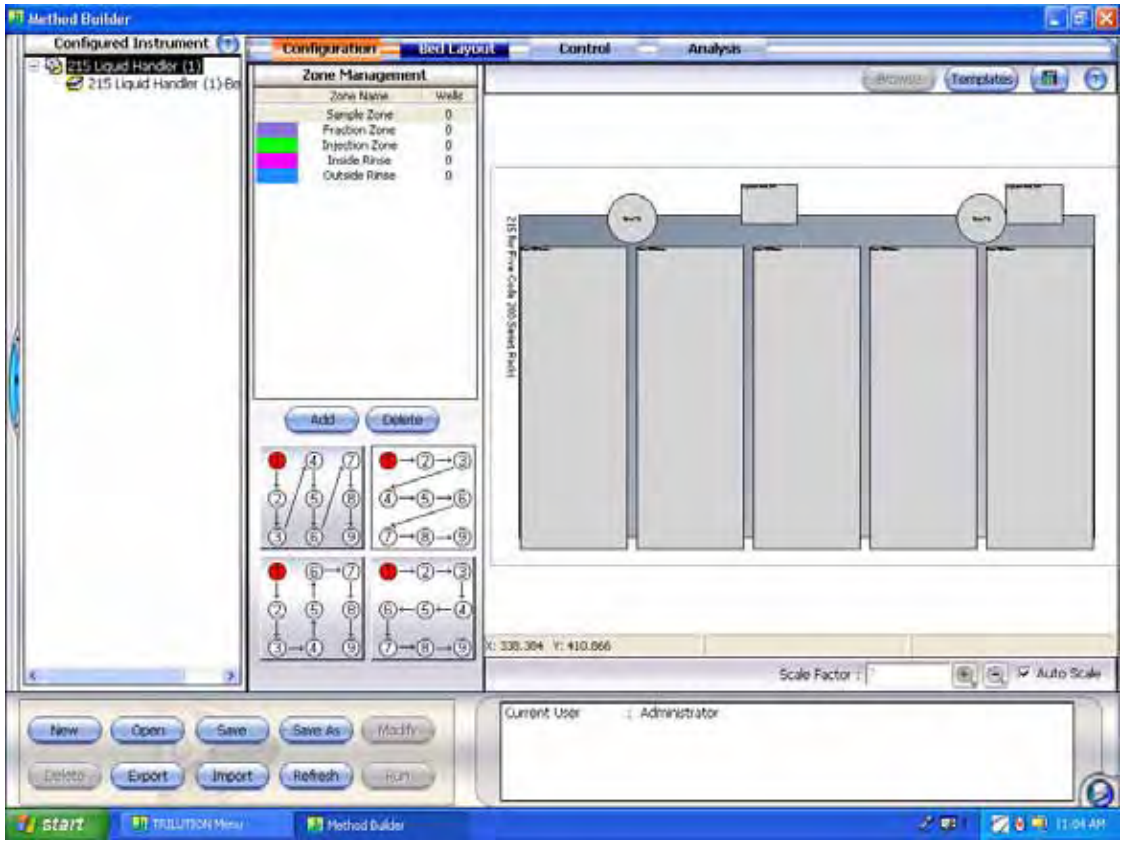
Method Builder - Bed Layout 5

A Bed Layout serves as one of the building blocks of a Method. It consists of the following:

- A Template
- Footprints
- Rack(s)
- Well(s)

Bed Layout Tab Window

The Bed Layout window in the Method Builder is a graphical interface used to create a Bed Layout.



The Method Builder - Bed Layout Tab Window

It has the following sections:

Section	*Described on*
Configured Instrument Panel	page 5-3
Zone Management	page 5-4
Numbering Pattern	page 5-4
Workspace	page 5-4

Configured Instrument Panel

This panel is used to provide information and also for navigation. Information provided is dependent on the instrument type.

Detector. Because detectors do not require Bed Layouts, clicking on a detector does nothing.

Fraction Collector. Lists Bed Layout. Can navigate to the Bed Layout by clicking the Bed Layout name.

Injector. Because injectors do not require Bed Layouts, clicking on an injector does nothing.

Liquid Handler. Lists Bed Layout. Can navigate to the Bed Layout by clicking the Bed Layout name.

Mobile Phase. Because mobile phase instruments do not require Bed Layouts, clicking on a mobile phase instrument does nothing.

Switching Valve. Because switching valve instruments do not require Bed Layouts, clicking on a switching valve instrument does nothing.

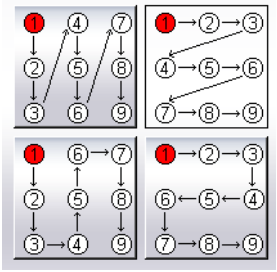
System Interface. Because system interfaces do not require Bed Layouts, clicking on a system interface does nothing.

Syringe Pump. Because syringe pumps do not require Bed Layouts, clicking on a syringe pump does nothing.

Zone Management

Allows you to create, modify, delete, or select zones.

Numbering Pattern



Numbering Patterns

Allows you to select how blocks of wells will be numbered.

To select a pattern for numbering the wells, do the following:

1 Click on the desired pattern.

2 Click on the starting corner desired for the pattern (the well is highlighted red).

Workspace

Forms the area to create or view a Bed Layout.

Creating a New Bed Layout

1 In the Method Builder, select the Bed Layout tab.

2 Do one of the following.

- To use the displayed template, continue to step 3.
- Click **TEMPLATES**. Then select a Bed Layout template. Click **OK**. The window is refreshed to display the new template.
- Click **BROWSE**. Select an existing or imported Bed Layout and then click **OK**.
- In the Configured Instrument Panel, right-click the instrument and select **CREATE BED LAYOUT**. Then select a Bed Layout template. Click **OK**. The window is refreshed to display the new template.

3 On the template, select a footprint. The footprint is highlighted with a red border.

4 To add a rack, do the following:

a) Double-click the footprint.

b) From the ***Rack List***, select a rack.

c) Click **OK**. The window is refreshed to display the rack on the template.

5 To define a Zone, do the following:

a) Click **ADD**.

b) Type a unique name, select colors, and select the starting number for the zone.

- ***Name***: It is possible to create multiple zones, but each must have a unique name.
- ***Starting Number***: The first number that will be used when numbering wells in the zone.
- ***Active Text Color***: The color that is used for the numbers of the wells when the zone is active.
- ***Inactive Text Color***: The color that is used for the numbers of the wells when the zone is inactive.
- ***Active Zone Color***: The color used for the wells in the zone when it is active. As new zones are added, the Active Zone Color automatically increments. The zone becomes active when it is selected from the Zone drop-down menu. Only one zone can be active at a time. Refer to the Sample in the dialog to see the Active Text Color on the Active Zone Color.
- ***Inactive Zone Color***: The color used for the wells in the zone when it is inactive. The zone becomes inactive when another zone is selected from the Zone drop-down menu. Multiple zones can be inactive at one time. The default Inactive Text Color is Black. The default Inactive Zone Color is Beige. Refer to the Sample in the dialog to see the Inactive Text Color on the Inactive Zone Color.

c) Click **OK**. The zone is listed under Zone Management.

6 To select a pattern for numbering the wells, do the following:

a) Click on the desired pattern.

b) Click on the starting corner desired for the pattern (the well is highlighted red).

7 To add wells to a zone, do any of the following:

a) Hold **SHIFT** and then click on individual wells to number them in the order selected.

b) Lasso blocks of wells to number them according to the numbering pattern selected.

c) When using multiple layer racks, hide one layer to assign zone(s) to another. To do this, select/highlight the element then right click and select **HIDE** from the menu. Select **SHOW ALL** to unhide the elements.

8 In the workspace, do the following:

a) To zoom the Bed Layout, toggle the Auto Scale selection off.

b) To zoom in on the Bed Layout, click once or repeatedly (maximum scale factor 2000, increments by 5). TRILUTION LC will zoom in to the center of the cross hairs. Move the cross hairs by scrolling the window.

c) To zoom out on the Bed Layout, click once or repeatedly.

d) To zoom to a specific scale factor, enter the number in the Scale Factor field.

Modifying a Bed Layout

You can modify a Bed Layout by doing the following:

- Add new racks, wells, or zones to the template.
- Delete racks from the workspace.
- Delete zones.
- Change the numbering pattern.
- Replace racks in the workspace.
- Add or clear wells from zones.

When you right-click on a rack or well in the workspace, a menu is provided with options to delete the rack or clear the well from the active zone or from all zones.

You can also delete racks from the workspace by pressing the **DELETE** key.

To modify a Bed Layout

1 Open the Method and then click the Bed Layout tab.

2 Do any of the following:

a) Add new racks, wells, or zones to the template, see **Creating a New Bed Layout** on page 5-5.

b) Delete racks from the workspace by doing the following:

1) Click to select/highlight the rack.

2) Right-click then select **DELETE** or press the **DELETE** key.

c) Delete wells from all zones or from the active zone by doing the following:

   1) Select the wells.

   2) Right-click and select either **CLEAR SELECTED WELLS FROM ACTIVE ZONE** or **CLEAR SELECTED WELLS FROM ALL ZONES**.

d) Clear all zones or clear the active zone by doing the following:

   1) Click to select any element.

   2) Right-click and select either **CLEAR ALL ZONES** or **CLEAR ACTIVE ZONE**.

e) Delete zones by doing the following:

   1) Select the zone to be deleted.

   2) Click **DELETE**.

f) Change the colors. Double-click the zone name to modify.

g) Change the numbering pattern.

Deleting a Bed Layout

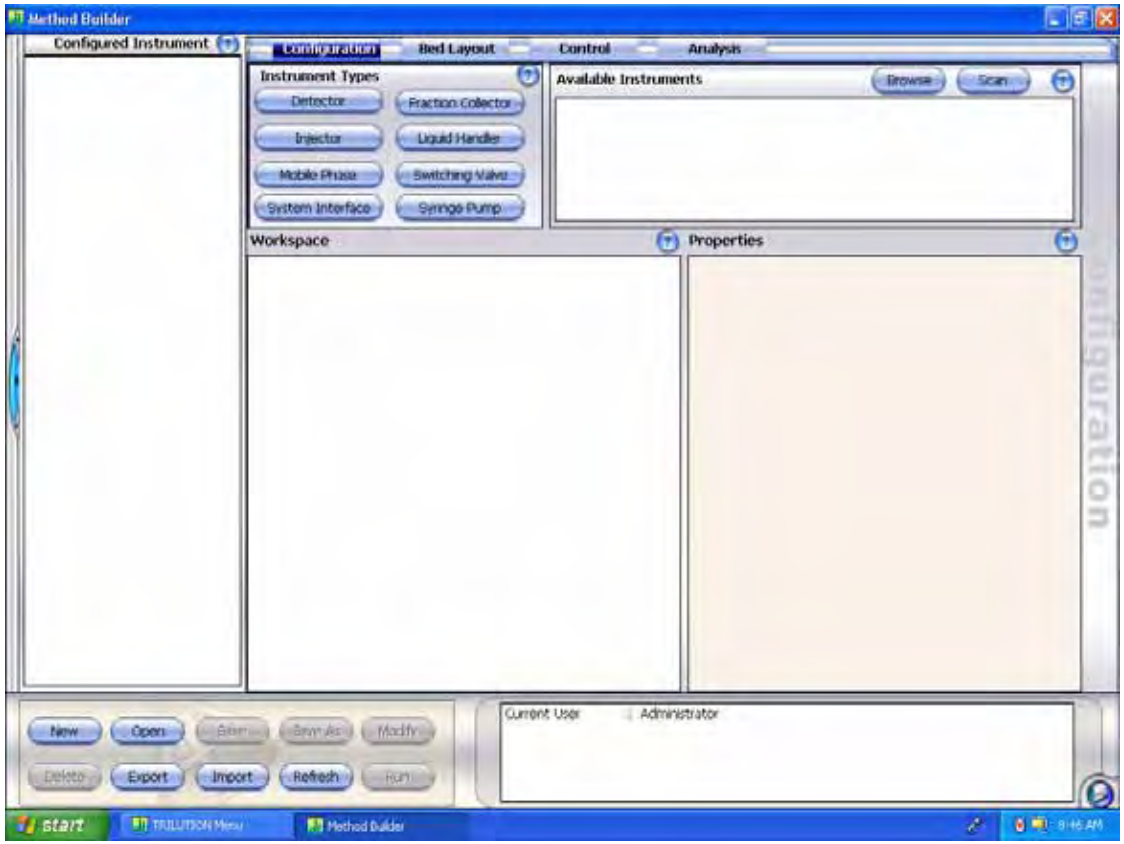
On the Configured Instrument palette, select a Bed Layout and then right-click to view the submenu. On the submenu, click **DELETE BED LAYOUT**.

Creating a Method 6

This section takes you through the procedures for setting up a Method.

To begin creating a Method, select **METHOD** from the **LIQUID CHROMATOGRAPHY AND FRACTION COLLECTION** menu.

The Method Builder appears.



Method Builder

Method Builder

Using the options in the Method Builder, you specify the Configuration, a Bed Layout, method conditions for controlling instruments (Control), and analysis parameters (Analysis).

Action Buttons

The following action buttons are located in the lower left corner of the Method Builder.

Action Button	*Description*
NEW	Create a new Method.
OPEN	Open an existing Method.
SAVE	Save an existing Method to the same name.
SAVE AS	Save a new Method or save an existing Method to a new name. Optionally, type a short and/or long description for the Method.
MODIFY	Modify the short and/or long description for the Method.
DELETE	Deletes the open Method or all versions of the Method.
EXPORT	Exports the Method to a specified location as a .LCME file.

Action Button	*Description*
IMPORT	Imports a .LCME file and lists the Method in the Methods palette in the Project Library or replaces it in the Application.
REFRESH	Allows you to reload the Configured Instruments palette with any new Tasks created. It basically allows you to update the builder with the latest Tasks. It also allows you to update any changes to the unit settings. Refresh after deleting and before adding new instruments.
RUN	Runs the Application that the current Method was last saved to.

Configuration Tab

For details about this tab and how to create a Configuration, see ***Chapter 4, Method Builder - Configuration***.

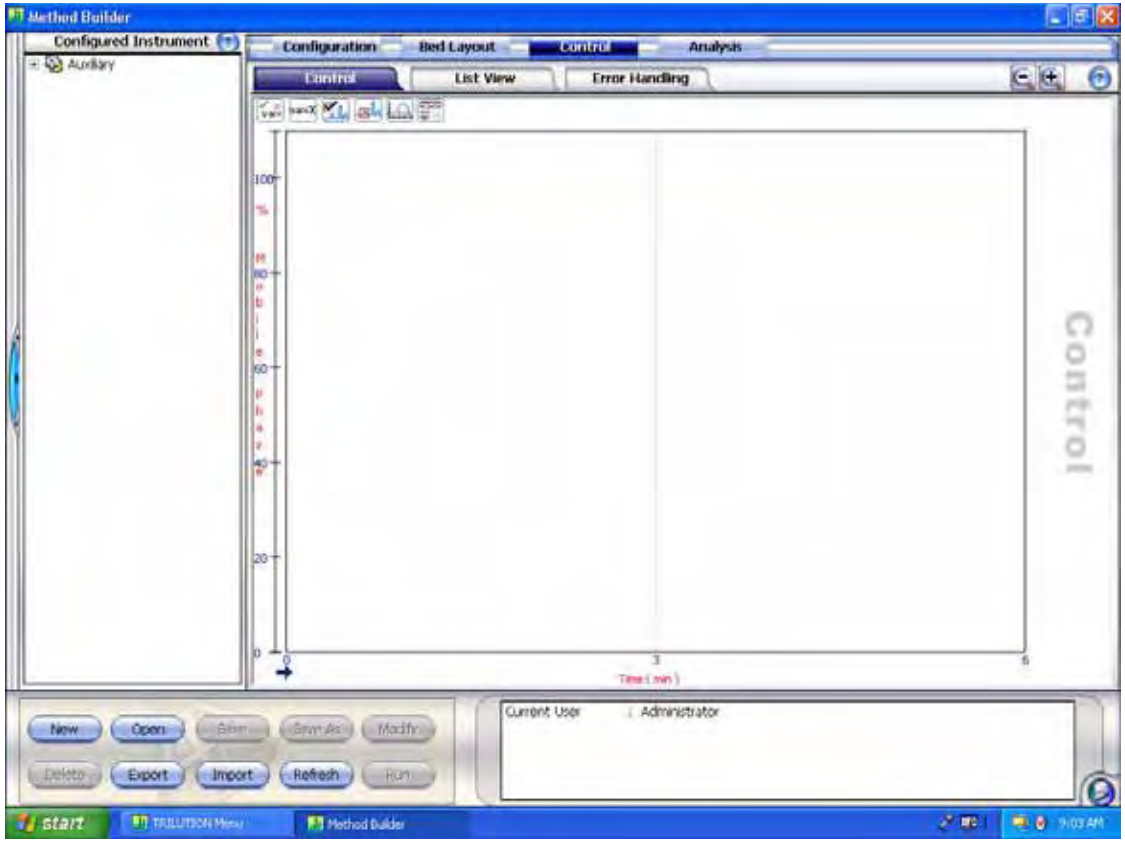
Bed Layout Tab

For details about this tab and how to create a Bed Layout, see ***Chapter 5, Method Builder - Bed Layout***.

Analysis Tab

For details about this tab and how to create Analyses, see ***Chapter 7, Method Builder - Analysis***.

Control Tab



The Method Builder - Control Tab Window

Configured Instrument Panel

This panel is used to sort Tasks that will be added to the Control. Use this tab to specify Task conditions for controlling instruments. One default group (Auxiliary) exists for every Method. Groups descriptions follow.

Auxiliary

Tasks that are not specific to any instrument are listed under Auxiliary.

Mobile Phase

Mobile phase tasks are listed under Mobile Phase and then under the instrument name given to the pump.

Detector

Detector Tasks are listed alphanumerically below the instrument name given to the detector.

Fraction Collector

Fraction collector Tasks are listed alphanumerically below the instrument name given to the fraction collector.

Injector

Injector Tasks are listed alphanumerically below the instrument name given to the injector.

Liquid Handler

Liquid handler Tasks are listed alphanumerically below the instrument name given to the liquid handler.

Switching Valve

Switching valve Tasks are listed alphanumerically below the instrument name given to the switching valve instrument.

System Interface

System interface Tasks are listed alphanumerically below the instrument name given to the system interface.

Syringe Pump

Syringe pump Tasks are listed alphanumerically below the instrument name given to the syringe pump.

Workspace

Shows a graphic representation of timed events and mobile phase concentration information.

Toolbar

Provides quick access to some options available in the Control window. To activate a tool, just click on its icon.

Method Variables tool	Displays a dialog listing default variables and all variables used in the Method. Current value for each variable is displayed. Right-clicking in this dialog also allows you to Add, Modify, and Delete Method variables. Click the up and down arrows to reorder the variables. They will display this way in the Sample List.
Sample Variable tool	Identifies the zone specified in the injection task so that TRILUTION LC knows where fractions for re-injection are located.
Application Run Results tool	Displays the Application Run Results dialog. Select a chromatogram from a previous run to overlay the Method Control.

Fraction Collection tool	After selecting a chromatogram from a previous run to overlay the Method Control, click this tool to update the overlay with the fraction collection start and stop lines.
Peak Width tool	Displays the Peak Width Info dialog. Enter a peak width used for fraction collection when collecting by peak slope and sensitivity and auto calculate is set to FALSE.
Sensitivity calculator	Displays a calculator that uses internal mathematical tables to determine a slope sensitivity based on a specified peak slope, peak width, and data rate that will be used for fraction collection.
Zoom In tool	Makes the viewable time scale shorter.
Zoom Out tool	Makes the viewable time scale longer.
Left tool	Scrolls the X-axis to the left.

	Right tool	Scrolls the X-axis to the right.
	Help tool	Displays the on-line help information.

Right-click menu

Task

Right-click on an Task icon to display the following menu options.

Menu	*Description*
PROPERTY	Allows you to change the time of the Task or the values for the properties.
DELETE	Deletes the Task from the Method Control.
OPEN	Opens the Task in the Task Builder.

Grid

Right-click on the grid to display the following menu options.

Menu	*Description*
COLOR: BACK	Allows you to change the color of the background of the grid.

Menu	*Description*
COLOR: FRONT	Allows you to change the color of the vertical lines on the grid.
GRID	Toggles hide or show the vertical lines on the grid.

Gradient

Right-click on a gradient to display the following menu options.

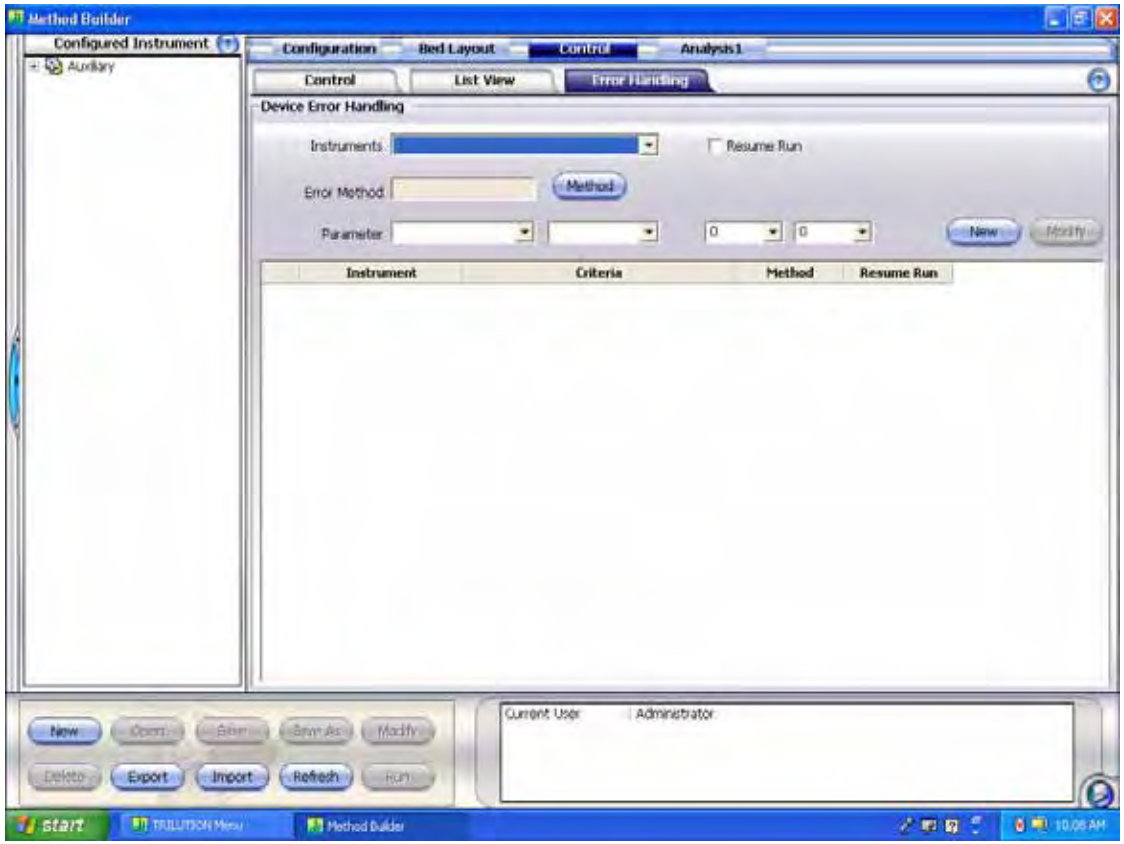
Menu	*Description*
PROPERTY	Allows you to change flow rate, time, and percent composition of the gradient.
DELETE	Deletes the gradient from the Method Control.

List View Tab

Displays and describes Control Tasks using text and minimal graphics. It is a view-only tab.

Error Handling Tab

TRILUTION LC can automatically respond to the occurrence of defined errors during a run. To make this happen, set up Methods that tell TRILUTION LC what to do if it encounters one of those errors. The error handling Method should not include an error handling Method and should have error limits that are greater than the control Method error limits.



The Method Builder - Control - Error Handling Tab Window

There are four possible user-defined responses for when a defined error occurs during a run. A description of those responses follows:

- An error handling Method is identified and Resume Run is checked.
- No error handling Method is identified and Resume Run is checked.
- An error handling Method is identified and Resume Run is not checked.
- No error handling Method is identified and Resume Run is not checked.

A notification is displayed to indicate than an error has been encountered. See **Notification** in ***Chapter1***.

Set up instrument error handling

1 Select the instrument to monitor from the drop-down list of instruments in the Configuration.

2 Optionally, select an error method to run when this error is encountered.

3 Select the parameter from the drop-down list of possible parameters for the instrument selected.

4 Select a valid mathematical operator (all are listed, though some would not make sense).

5 Type the value to monitor in the field to the right of the mathematical operator.

6 Optionally, select the Resume Run check box.

7 Click **NEW**.

8 Repeat all steps for additional instruments or set up additional parameters for the same instrument.

Parameter Descriptions

Pressure

This error results when the system pressure exceeds or is equal to or is lower than the value set on this screen.

Refer to the table **Pressure Error Responses** on page 6-15 that describes all possible responses post-error

Pressure Error Responses

Error handling Method identified?	*Resume Run?*	*Response*
Yes	Yes	• Pumps stop • Error Method Execution notification displays* • Control Method terminates • Error handling method executes • Application Run resumes starting with the next sample in the Sample List • Run Complete notification displays (with errors, see log for details)*
No	Yes	• Pumps stop • Error Method Execution notification displays* • Application Run continues • Run Complete notification displays (with errors, see log for details)*

Pressure Error Responses (Continued)

Error handling Method identified?	*Resume Run?*	*Response*
Yes	No	• Pumps stop • Error Method Execution notification displays* • Control Method terminates • Error handling method executes • Run Complete notification displays (with errors, see log for details)*
No	No	• Pumps stop • Error Method Execution notification displays* • Run terminates • Run Complete notification displays (with errors, see log for details)*

*. Notification only displays if specified. See **Notification** in ***Chapter1***.

Wait Time

This error results when an input contact does not occur within the length of time set on this screen. If the wait time is set to zero (0), the system waits indefinitely for the input contact. The valid mathematical operator is greater than or equal to. Refer to the table **Wait Time and Contact Error Responses** on page 6-17 that describes all possible responses post-error.

Contact Error

This error results when an error input contact is activated. The valid mathematical operator is == and the valid values are TRUE or FALSE where TRUE=OPEN and FALSE=CLOSE. Refer to the table **Wait Time and Contact Error Responses** on page 6-17 that describes all possible responses post-error.

Wait Time and Contact Error Responses

Error handling Method identified?	*Resume Run?*	*Response*
Yes	Yes	• Error Method Execution notification displays* • Control Method terminates • Error handling Method executes • Run resumes starting with the next step in the Sample List • Run Complete notification displays (with errors, see log for details)*
No	Yes	• Error Method Execution notification displays* • Run continues • Run Complete notification displays (with errors, see log for details)*

Wait Time and Contact Error Responses (Continued)

Yes	No	• Error Method Execution notification displays* • Control Method terminates • Error handling Method executes • Application Run terminates • Run Complete notification displays (with errors, see log for details)*
No	No	• Error Method Execution notification displays* • Application Run terminates • Run Complete notification displays (with errors, see log for details)*

*. Notification only displays if specified. See **Notification** in ***Chapter1***.

Modify instrument error handling

You can modify instrument error handling by doing the following:

- Setting up error handling for additional instruments in the Configuration.
- Setting up error handling with additional criteria for the same instrument.

- Deleting instruments and/or parameters from the monitored list of criteria.
- Modifying the instruments and/or parameters in the monitored list of criteria.

When you right-click on a row in the table of monitored criteria, a menu is displayed with the option to delete the criteria.

To make a modification, select the row, make the desired changes, and then click **MODIFY**.

Mobile Phase Tasks

The following is a description of the default Mobile Phase Tasks, Gradient and Gradient with Variables and also a description of each default mobile phase template. Mobile phase templates default to 10 minutes.

Note: Unlike other Tasks, this Task cannot be opened in the Task Builder.

Gradient Task

To set the gradient do the following:

1 Ensure that you have Mobile Phase pumps in the Configuration.

2 Drag the Gradient Task and drop it in the workspace.

3 In the Flow Rate box, type the desired total flow rate.

4 In the Value column, type the percent composition for the first pump in the Property column. The software calculates the percent composition for additional pumps for you.

5 In the Time box, type the time at which the pumps will begin ramping to the specified flow and composition conditions.

A different color gradient line appears for each pump.

Gradient Task with Variables

To set the gradient do the following:

1 Ensure that you have Mobile Phase pumps in the Configuration.

2 Drag the Gradient Task with Variables and drop it in the workspace.

3 In the Flow Rate box, type the desired total flow rate or type #x where x is the name defined in the Sample List.

4 In the Value column, type the percent composition for the first pump in the Property column. The software calculates the percent composition for additional pumps for you.

   Or type #x where x is the name defined in the Sample List.

5 In the Time box, type the time at which the pumps will begin ramping to the specified flow and composition conditions or type #x where x is the name defined in the Sample List.

A different color gradient line appears for each pump.

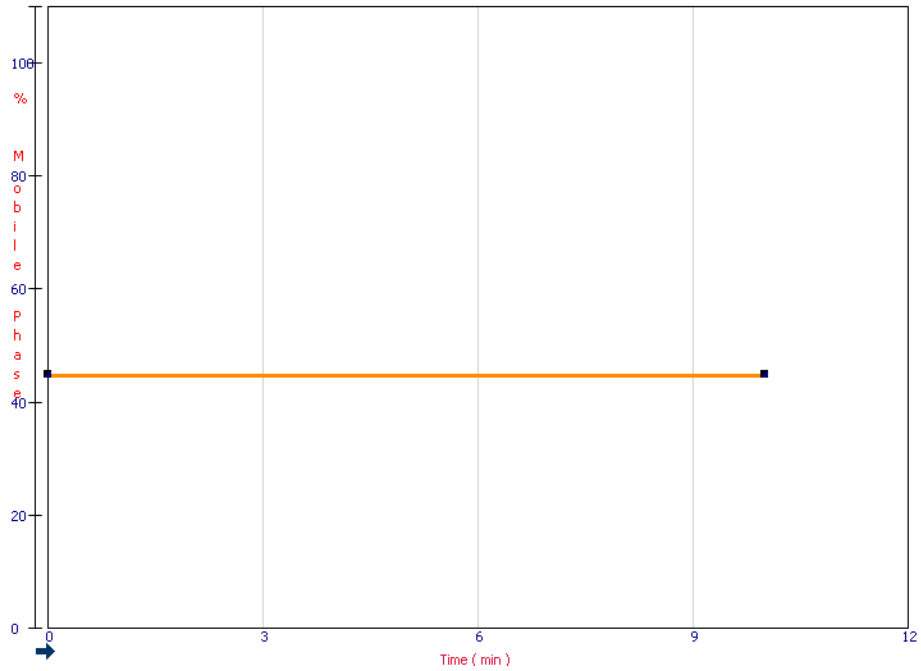
Isocratic

To add an isocratic mobile phase to the Control:

1 Ensure that you have Mobile Phase pump(s) in the Configuration.

2 Drag the Gradient Task with Variables and drop it in the workspace.

3 Specify the flow rate.



Isocratic Mobile Phase

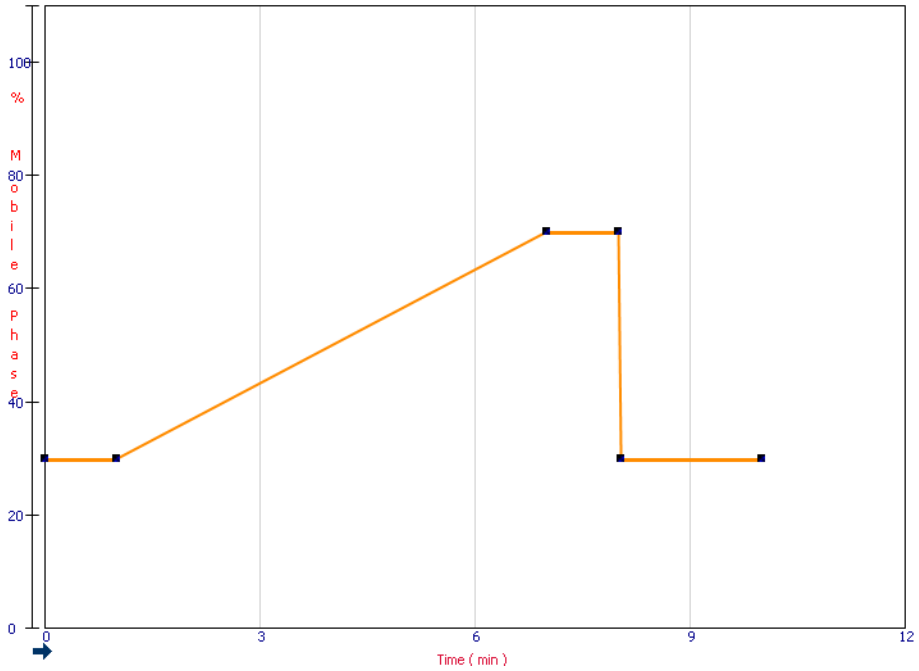
Linear Gradient with Column Wash Out

To add linear gradient with column wash out mobile phase to the Control:

1 Ensure that you have Mobile Phase pumps in the Configuration.

2 Drag the Gradient Task with Variables and drop it in the workspace.

3 Specify the flow rate.



Linear Gradient with Column Wash Out

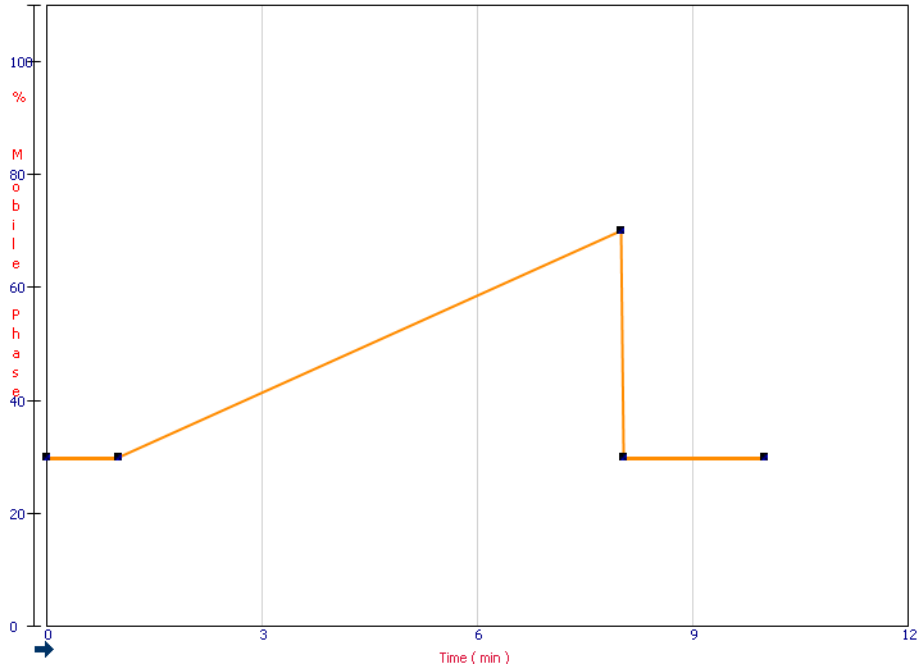
Linear Gradient with No Column Wash Out

To add linear gradient with no column wash out mobile phase to the Control:

1 Ensure that you have Mobile Phase pumps in the Configuration.

2 Drag the Gradient Task with Variables and drop it in the workspace.

3 Specify the flow rate.



Linear Gradient with No Column Wash Out

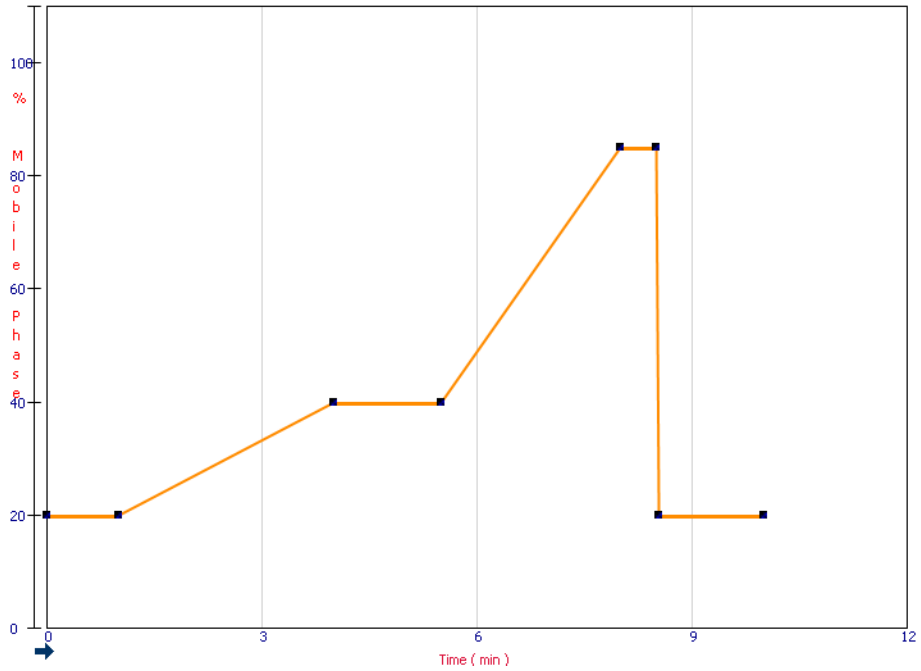
Multi Linear Gradient with Step and Column Wash Out

To add a multi linear gradient with step and column wash out mobile phase to the Control:

1 Ensure that you have Mobile Phase pumps in the Configuration.

2 Drag the Gradient Task with Variables and drop it in the workspace.

3 Specify the flow rate.



Multi Linear Gradient with Step and Column Wash Out

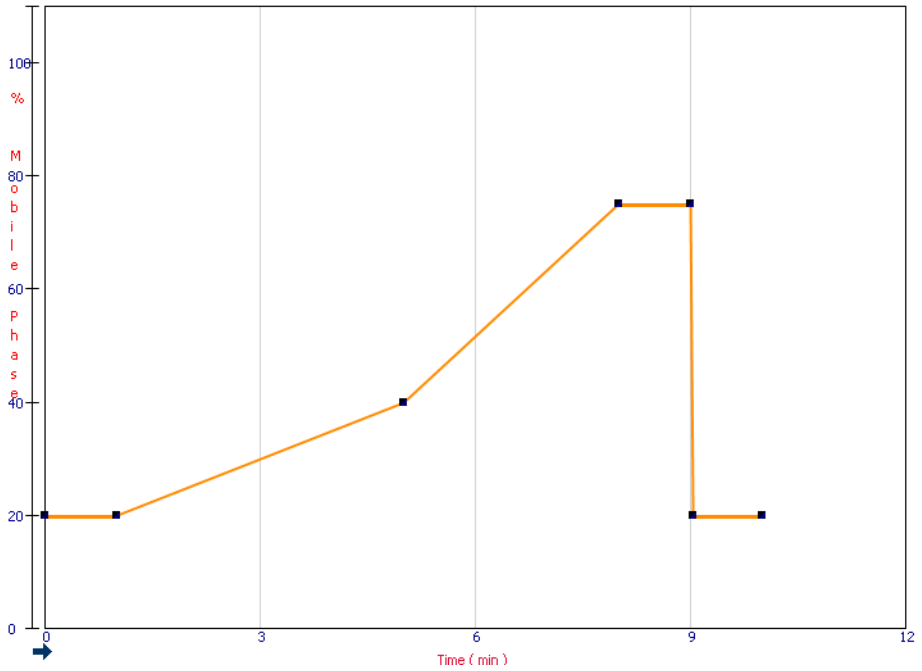
Multiple Linear Gradient with Column Wash Out

To add a multiple linear gradient with column wash out mobile phase to the Control:

1 Ensure that you have Mobile Phase pumps in the Configuration.

2 Drag the Gradient Task with Variables and drop it in the workspace.

3 Specify the flow rate.



Multiple Linear Gradient with Column Wash Out

Auxiliary Tasks

The following is a description of the default Auxiliary Tasks.

Note: Unlike other Tasks, these Tasks cannot be opened in the Task Builder.

Sync Task

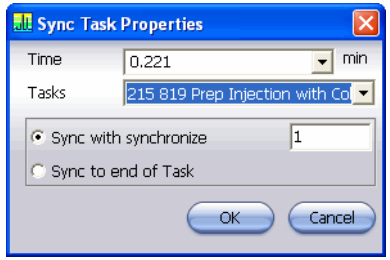
To set a synchronize to coordinate a step in a Task with a time in a Method:

1 Insert a Synchronize command(s) in the Task.

2 Insert that Task in the Method.

3 Insert a Sync Task in the Method.

a) In the Time box, type the time at which the Method will wait for the Synchronize in the Task.



Sync Task Properties

b) In the Tasks drop-down, select the Task to which to synchronize.

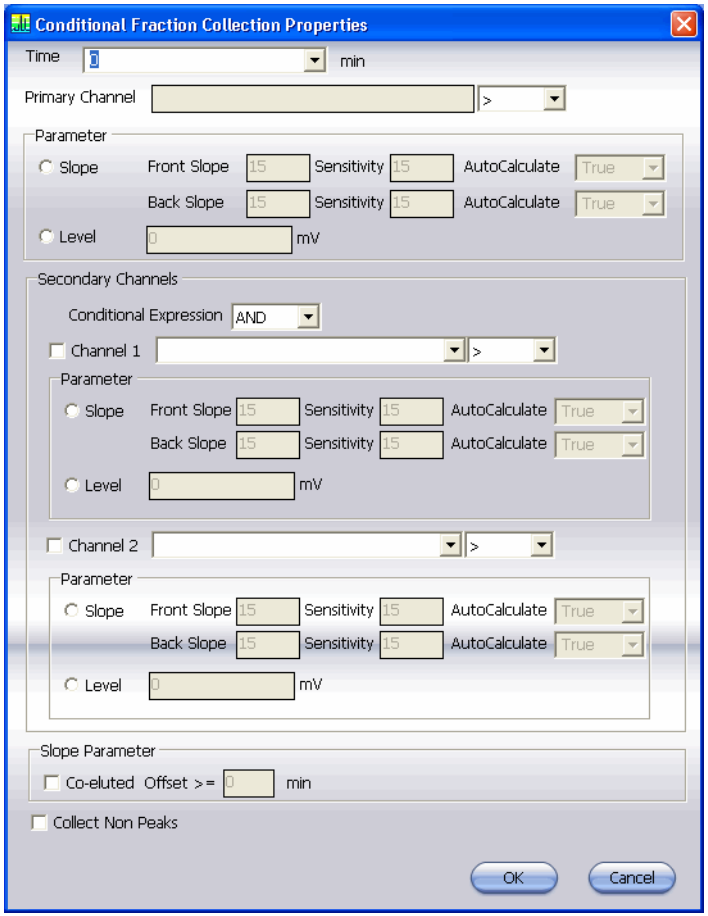
c) Select the option button to either Sync with synchronize or Sync to end of Task.

If Sync with synchronize, then also type the number that corresponds to the Synchronize in the Task. For example, if three Synchronize commands were inserted in the Task, typing 1 would synchronize the Method to the first Synchronize command in the Task. Typing 3 would synchronize the Method to the last Synchronize command in the Task.

If Sync to end of Task is selected, the Method will wait until the Task completes.

The Sync Task displays as a blue vertical line in the Control.

Conditional Fraction Collection



The Conditional Fraction Collection Task Properties Window

The Conditional Fraction Collection task can be used in place of the Fraction Collection Settings Task. It allows for setting multiple parameters for one or more channels at once.

Setting Up Conditional Fraction Collection

1 Ensure that you have data channels set in the Configuration.

2 Drag the Conditional Fraction Collection Task and drop it in the workspace at a time prior to the Start Fraction Collection Task and also prior to the Set Fraction Site Task (both required when using the Conditional Fraction Collection Task).

3 Select the primary data channel and its parameters that must be met for fraction collection to occur (either slope or level).

Note: When collecting by slope, you **must** choose greater than or equal to (the default is greater than).

4 Optionally, select an additional channel (Channel 1) to be monitored and its parameters that must be met for fraction collection.

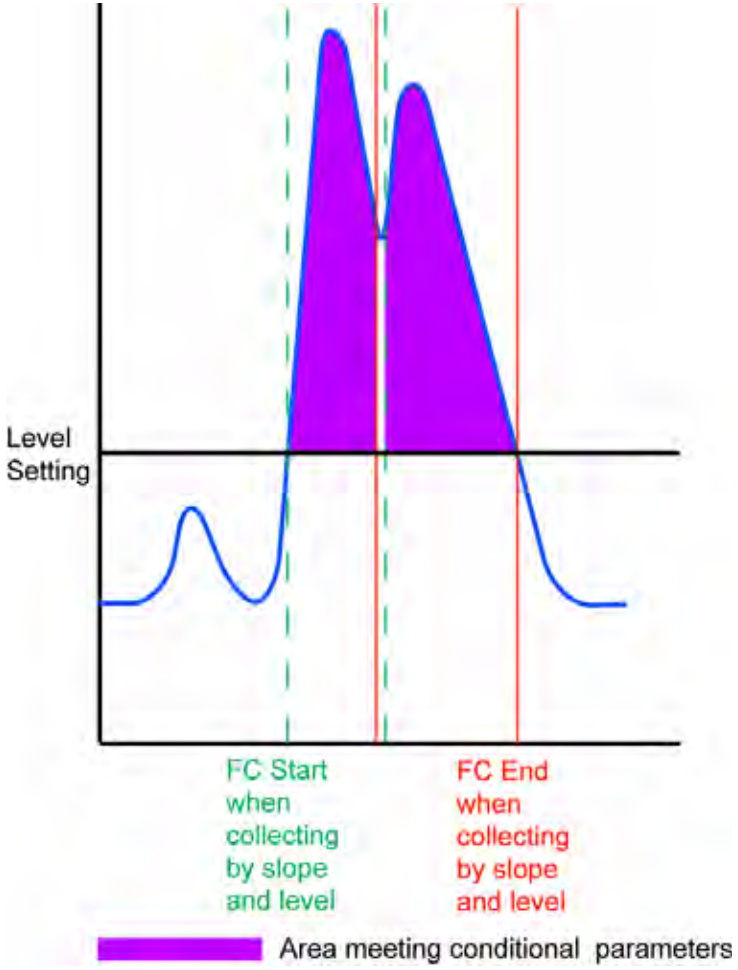
5 Select AND or OR from the Conditional Expression drop-down list to indicate whether fraction collection will occur when the Primary Channel conditions and the Channel 1 conditions are met or fraction collection will occur when the Primary Channel conditions or the Channel 1 conditions are met.

6 Optionally, select an additional channel (Channel 2) to be monitored and its parameters that must be met for fraction collection.

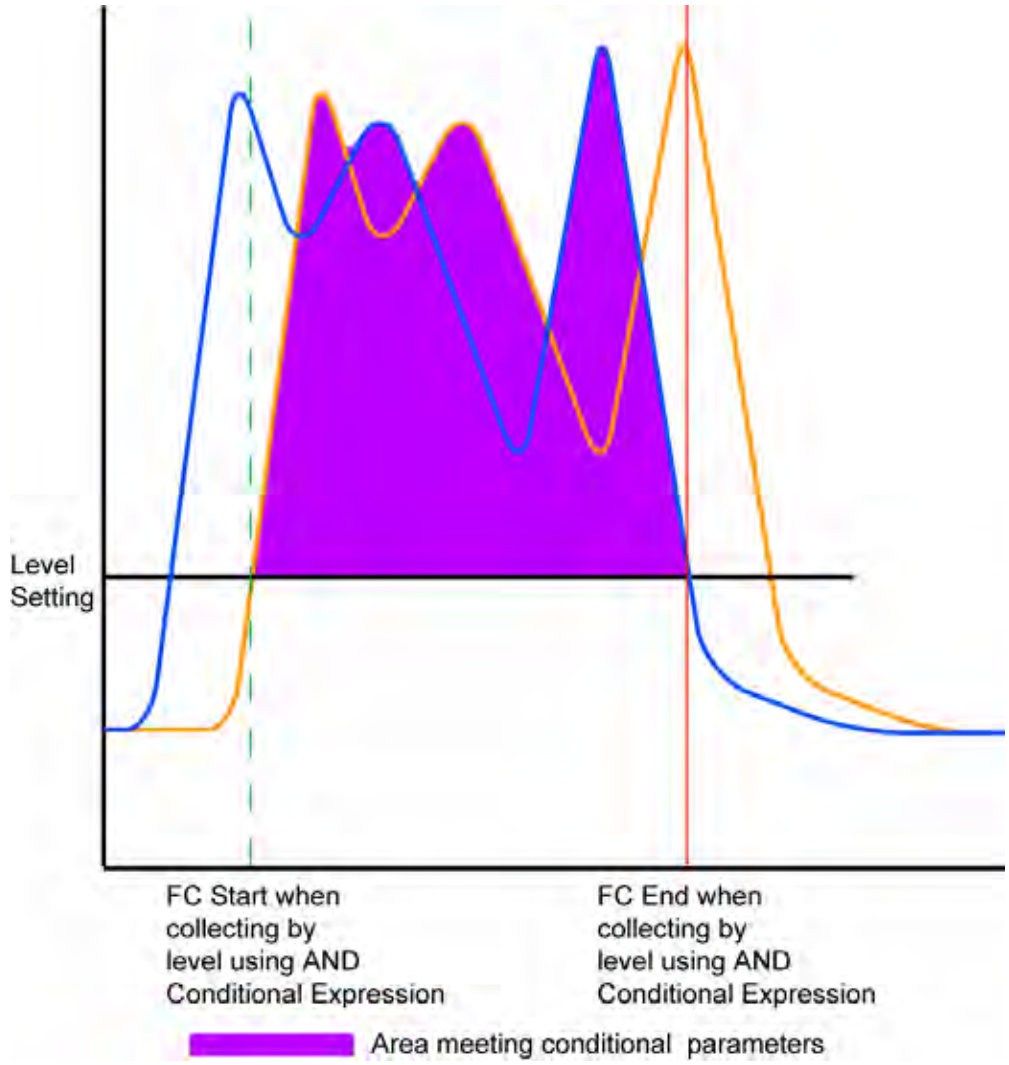
7 Select AND or OR from the Conditional Expression drop-down list to indicate whether fraction collection will occur when the Primary Channel conditions and the Channel 1 conditions and the Channel 2 conditions are met or fraction collection will occur when the Primary Channel conditions or the Channel 1 conditions or the Channel 2 conditions are met. Refer to the illustrations that follow for examples of how this is used.

8 Optionally, select the Co-eluted check box to collect co-eluted peaks.

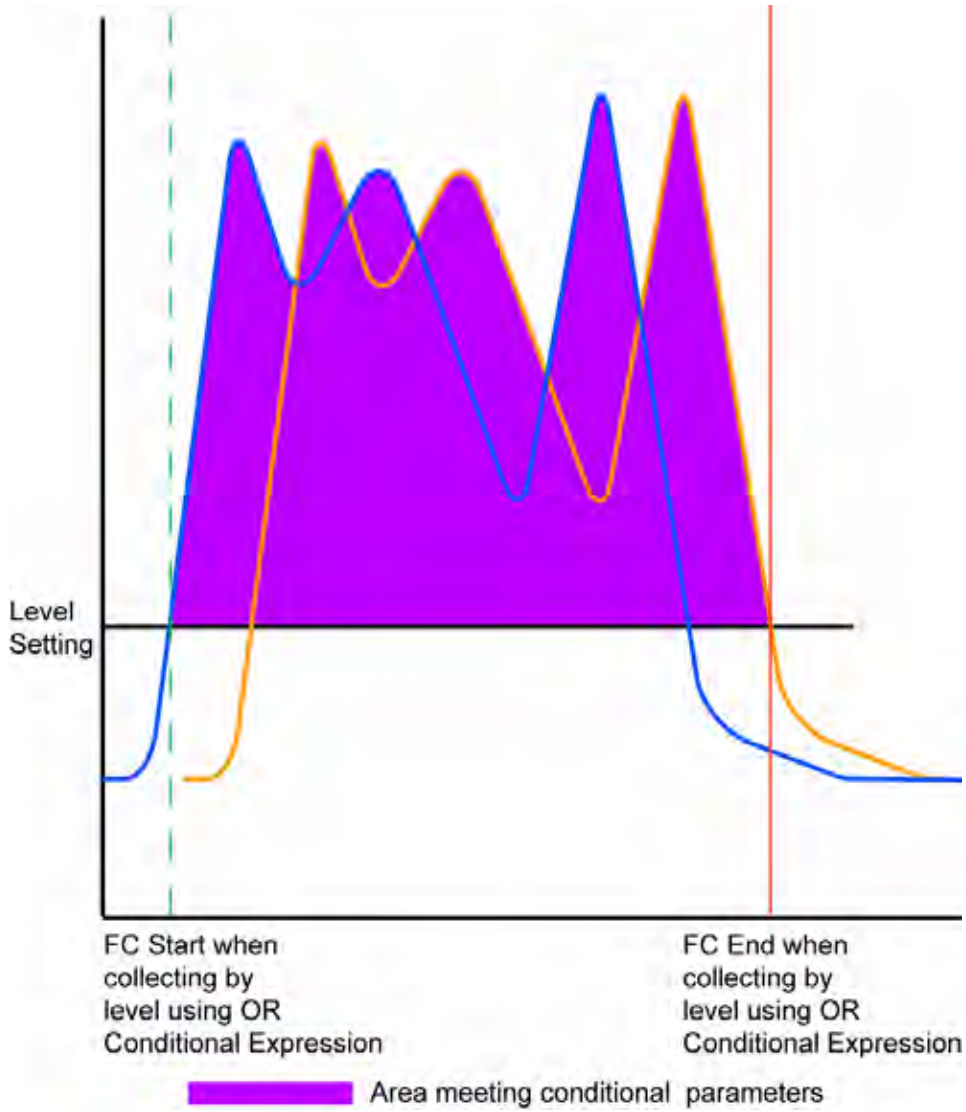
9 Optionally, select the Collect Non Peaks check box to collect non peaks.



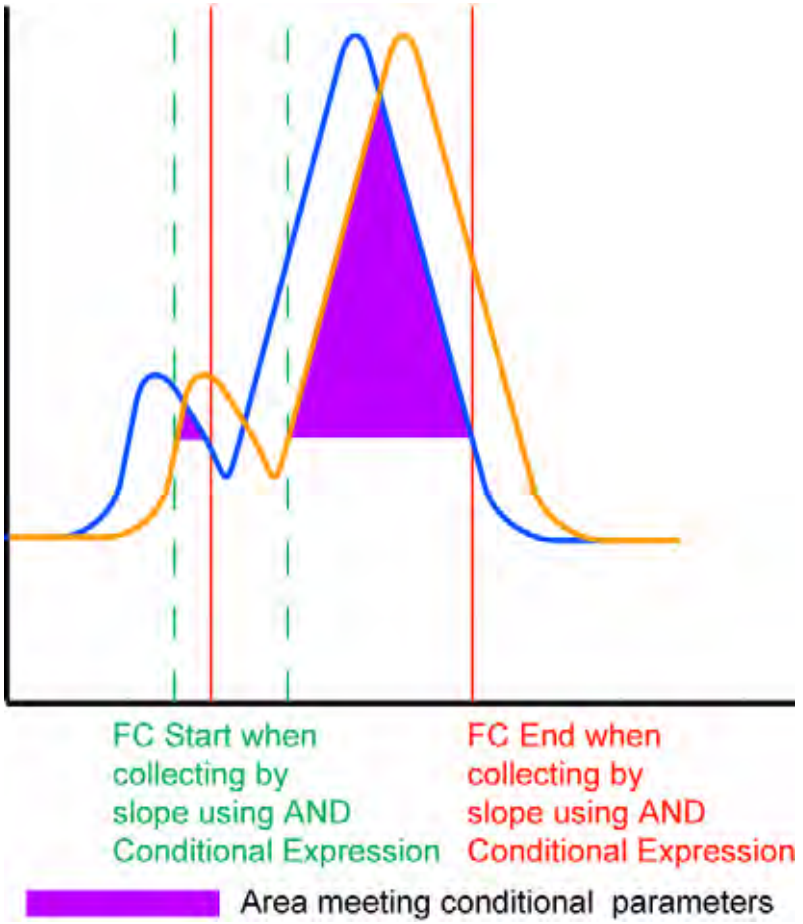
Primary Channel and Secondary Channel 1 are the same Channel (different parameters)



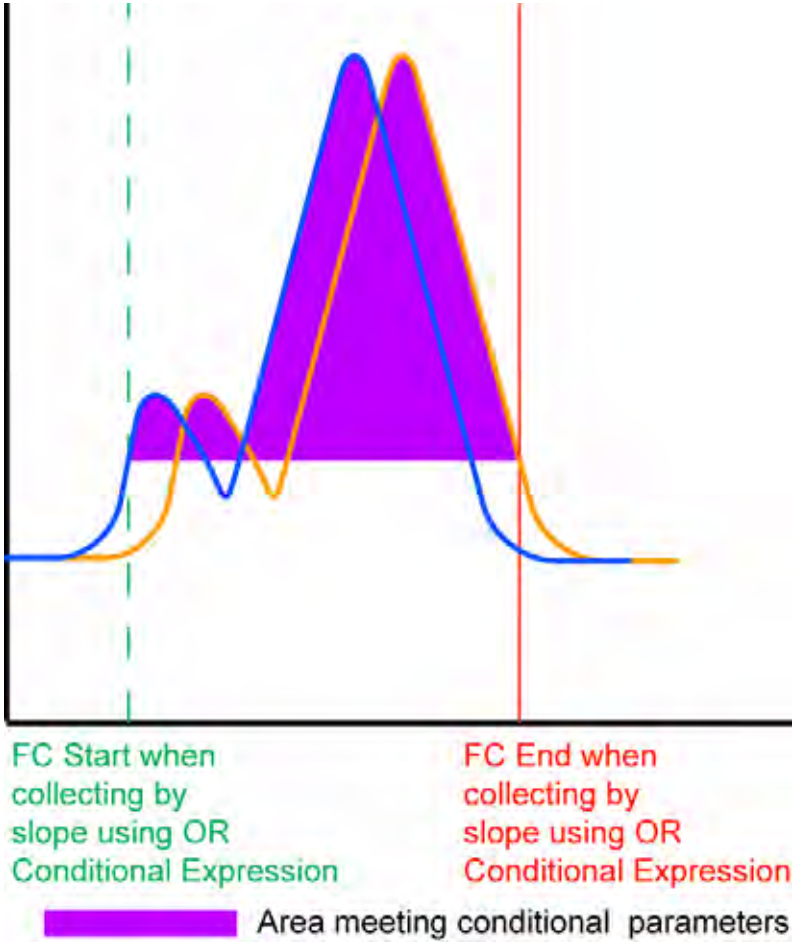
Collecting by level on two channels using the AND conditional expression



Collecting by level on two channels using the OR conditional expression


FC Start when collecting by slope using AND Conditional Expression
FC End when collecting by slope using AND Conditional Expression
Area meeting conditional parameters

Collecting by slope on two channels using the AND conditional expression


FC Start when collecting by slope using OR Conditional Expression
FC End when collecting by slope using OR Conditional Expression
Area meeting conditional parameters

Collecting by slope on two channels using the OR conditional expression

Scheduling Timed Tasks

Each command issued in the Method Control is referred to as Task. You can specify Tasks that set the gradient profile, start and stop data collection, control the injector, or send or wait for a contact signal.

By dragging Tasks into the Control, you tell TRILUTION LC when to issue commands to Gilson instruments via the Gilson Serial Input/Output Channel (GSIOC). The GSIOC is a communications channel that connects TRILUTION LC to Gilson instruments such as pumps, detectors, injectors and fraction collectors.

Within the properties box, there is a Time box for indicating the time point at which to start the Task.

When placing multiple Tasks for one instrument, allow enough time for the instrument to perform one Task before issuing another Task. As a suggestion, separate the Tasks by a minimum of 0.1 min.

Deleting Task from Control

To remove a Task from the Control:

1 Right-click the Task.

2 Select **DELETE**.

Modifying Task Time and/or Properties

To change Task time or properties:

1 Right-click the Task.

2 Select **PROPERTY**.

Modifying Task

To modify the Task:

1 Right-click the Task.

2 Select **OPEN**.

Gradients

A basic gradient task and several gradient profiles are provided. Modify them to fit the Application.

Keywords:

- **Node:** The starting and ending point of a mobile phase event.
- **Mobile Phase Event**: A line between two nodes characterized by time, flow rate, and pump percent composition.
- **Gradient**: One or many mobile phase events.

Adding a Mobile Phase Event

To add a mobile phase event, do the following:

1 Right-click on any horizontal mobile phase event on the gradient in the Control workspace.

2 From the submenu, select **PROPERTY**.

3 In the Gradient Properties dialog, type a flow rate, the **start** time for the new mobile phase event, and the percent composition for the pump(s).

4 Click **OK**. The mobile phase event is added beginning at the time indicated and ending at the last viewable time.

   For example, if the view displays 1–18 minutes. The end node is at 18 minutes. If the right arrow is clicked to scroll right, the node also moves right. For example, I clicked the right arrow twice and now my end node is at 30 minutes.

5 Place the mouse cursor over the end node until the cursor changes to a crosshair (✣). Click and drag the node to the desired end time. It is now set and will not change if scrolling the window to the right.

Modifying a Mobile Phase Event

To modify a mobile phase event, change the start or end time, the flow rate, or the percent composition for the pump(s). Modifying mobile phase events can **only** be done graphically.

Modifying start or end time

To modify the start time for a mobile phase event, do the following:

1 Move the mouse cursor over the node until the cursor changes to a crosshair (✣).

2 Click and drag the node to the desired time.

Modifying the flow rate

To modify the flow rate, do the following:

1 Right-click on the horizontal mobile phase event on the gradient in the Control workspace.

2 From the submenu, select **PROPERTY**.

3 In the Gradient Properties dialog, type the new flow rate and then click **OK**.

Modifying the percent composition

To modify the percent composition for the pump(s), do one of the following:

- Modify the percent composition using dialog boxes.
  a) Right-click on the horizontal mobile phase event on the gradient in the Control workspace.
  b) From the submenu, select **PROPERTY**.
  c) In the Gradient Properties dialog, type the new percent composition for the pump(s).
  d) Click **OK**.
- Modify the percent composition graphically.
  a) Move the cursor over the horizontal mobile phase event in the Control workspace until the cursor changes to a crosshair (✣).
  b) Click and drag the event to the desired composition for the Organic pump (as indicated in the Configuration).

Deleting a Mobile Phase Event

To delete a mobile phase event, do the following:

1 Right-click on any horizontal mobile phase event on the gradient in the Control workspace.

2 From the submenu, select **DELETE**.

Variables

To make your Method more flexible, you can indicate a variable name instead of entering a value for a property in a Task. A variable name begins with # and can be any combination of letters and numbers and can contain some special characters. Valid variable names would be #Wavelength and #Sample_Vol1.

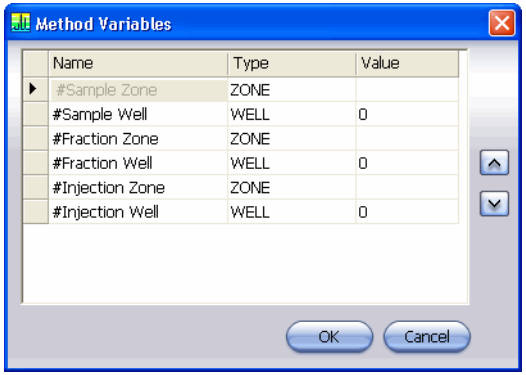
When setting a Sample List for a run, assign values to any undefined variables used by the Method. If the run is started and a value has not been assigned to a variable, the following message will be displayed:

TRILUTION
Invalid entry for #Sample Zone variable (row : 1, Method : Example). Application is paused. Correct the entry and mark to run the step.
OK

To see what variable names have been set for the Method and to indicate a default for each variable, do the following.

1 In the Method Control window, click the Method Variables tool ( ).

2 When the dialog box appears, select the variable by clicking in the column to the left of the variable name.



3 Right-click and select **MODIFY**.

4 To set a default value for the variable name, type a value in the Value box.

5 To remove an unused variable name, select the variable then right-click and select **DELETE**.

6 Click the up ( ) or down ( ) arrow to reorganize the variables. Variables listed up to down in the Method Variables dialog will appear left to right in the Sample List.

7 Click **OK** when finished.

Save and Close Method

When finished creating the Method:

1 Click **SAVE AS**.

2 When the Save As dialog appears:

a) Select an Application from the drop-down menu to which this Method will be saved.

b) Type a name for the Method in the ***Name*** field.

c) Optionally, type a short and/or long description.

d) Optionally, rename the components (Bed Layout, Configuration, etc.)

The following special characters are not permitted in names or descriptions: ampersand (&), apostrophe (‘), greater than (>), and back slash (\).

e) Click **SAVE**.

Exit the Method Builder

On the Method Builder, do one of the following:

- Click ( ) on the lower right corner of the Method Builder to exit and return to the TRILUTION menu.
- Click ( ) on the upper right corner of the Method Builder to close the builder.

Method Builder - Analysis 7

This section describes how to set conditions for analyzing peaks in collected data. Each analysis indicates how collected data is analyzed during a run or re-analysis processing. Analysis includes setting peak parameters, naming peaks, and identifying the reports to generate.

Configured Instrument Panel

This panel is used to provide information and also for navigation. Information provided is dependent on the instrument type.

Detector: Lists data channels and any associated analyses. Can navigate to an Analysis by clicking on its name.

Fraction Collector: Lists Bed Layout. Can navigate to the Bed Layout tab by clicking the Bed Layout name.

Injector: Clicking an injector name from this tab does nothing.

Liquid Handler: Lists Bed Layout. Can navigate to the Bed Layout tab by clicking the Bed Layout name.

Mobile Phase: Clicking a mobile phase pump name from this tab does nothing.

Switching Valve: Clicking a switching valve instrument name from this tab does nothing.

System Interface: Lists data channels and any associated analyses. Can navigate to an Analysis by clicking on its name.

Syringe Pump: Clicking a syringe pump name from this tab does nothing.

Creating an Analysis

To create an Analysis

1 In the Method Builder, select the Analysis tab which is always furthest right. (The name may be different if you renamed the Analysis when you saved the Method.)

2 On the Configured Instrument panel, click to select an Analysis.

3 Set the peak integration, report, and error handling options for the Analysis. Read on in this chapter for details.

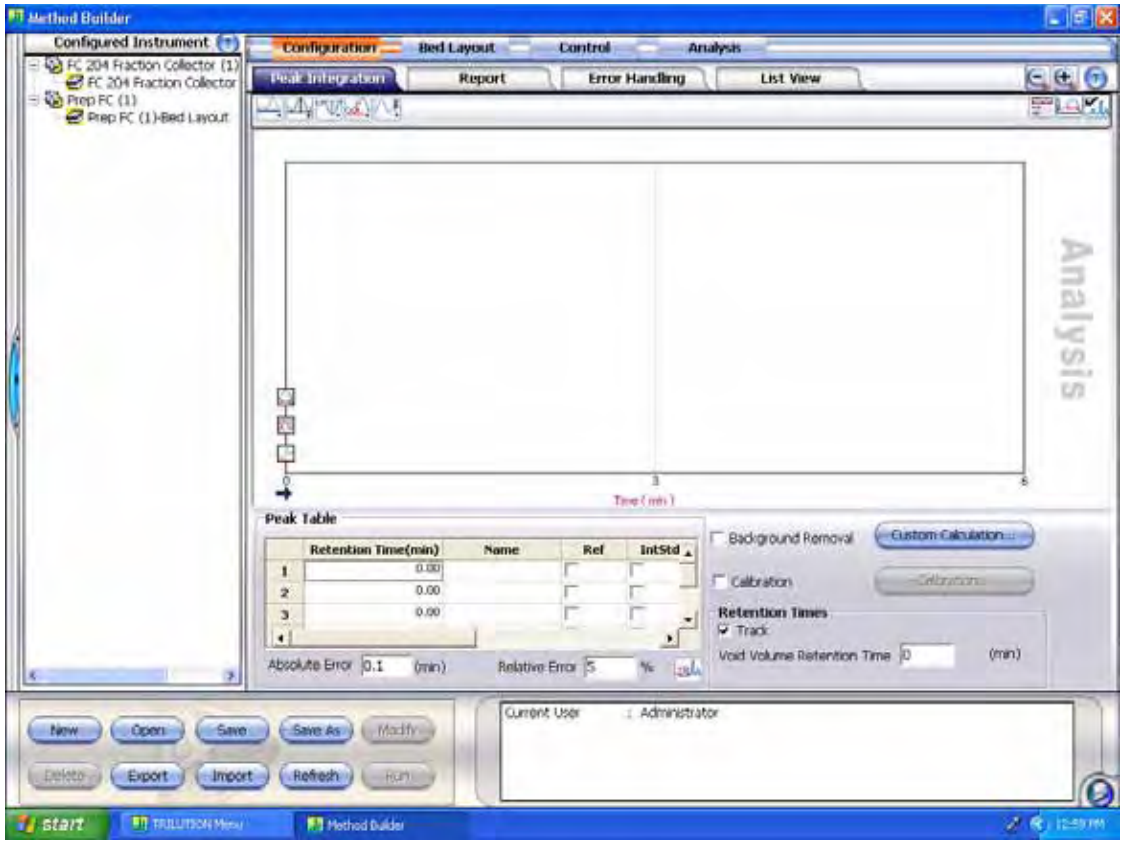
4 Do one of the following:

- Repeat for each Analysis.
- Right-click on an analysis and select **COPY ANALYSIS** to copy the analysis to the clipboard. To paste and automatically rename the analysis, right-click on the data channel and select **PASTE ANALYSIS**.

5 Right-click on an analysis and select **DEFAULT ANALYSIS** to specify which analysis TRILUTION LC will use during the run.

Peak Integration Tab

Using the options in the Method Builder - Analysis window, you indicate how collected data is analyzed and reported. Whether the data is analyzed at run time or afterwards, TRILUTION LC uses the information in the analysis to report on peaks detected in samples.



The Method Builder - Analysis - Peak Integration tab window

Setting Analysis Conditions

The Peak Integration tab in the Analysis window provides for setting analysis conditions.

- **Integration Tasks** set integration parameters for distinguishing peaks from baseline interference and sets alternate baseline techniques.
- **Background Removal** indicates if a blank chromatogram is subtracted from data analyzed by the method.
- **Peak Table** identifies information about the components in injected samples.
- **Error Handling** tells TRILUTION LC what types of checks to do on the calculated peak amounts and how the software responds if it detects an error.

When you create an Analysis, the following Tasks automatically appear at 0.00 minutes in the window.

- Default Baseline
- Inhibit Negative Peak Integration
- Peak Slope and Sensitivity

Integration Tasks

When you first open an Analysis window (Peak Integration tab), the following integration events are immediately set at 0.00 minutes:

- Default Baseline
- Inhibit Negative Peak Integration
- Peak Slope and Sensitivity

For most separations, these are the only events to set. However, you can delete or modify these events, if necessary.

Note: Integration always begins at analysis time 0. Analysis time 0 begins at the start of data collection in the Control. If integration tasks are deleted or moved away from time 0, the default parameters for the integration tasks will be used at time 0 until the first integration task. The default baseline is Default Baseline. The default front and back slopes are 15 with the sensitivities auto calculated.

Note: Removing the Inhibit Negative Peak Integration event does not turn on negative peak integration. Insert an Enable Negative Peak Integration event at the time point at which to start negative peak integration.

To be integrated, a peak must elute during data collection. Furthermore, every contour rising from and falling to the baseline must meet the peak detection criteria. An unlimited number of peaks per run can be integrated.

The software's ability to integrate peaks depends on the peak width, peak slope, and slope sensitivity settings. These settings give information to TRILUTION LC about the size and shape of your peaks and the noise level riding the baseline. However, if one or more peaks of interest are not integrated, modify some or all of these parameters before subsequent runs or re-analysis processing.

Following is a description of the available integration Tasks and how to set timed integration Tasks.

To add a Task

Each command issued in the Method Analysis is referred to as an Integration Task.

Note: Unlike other Tasks, these Tasks cannot be opened in the Task Builder.

You can specify Integration Tasks that set the baseline, inhibit or enable integration, inhibit or enable negative peak integration, set the peak slope, set the slope sensitivity, and start or stop integration by fraction collection.

By dragging Tasks into the Analysis, you tell TRILUTION LC when to collect peaks.

Within the properties box, there is a Time box for indicating the time point at which to issue the Task.

To add a timed Integration Task:

1 Drag the icon ( ) to the Analysis.

2 Indicate time and command parameters. The limit of resolution is 0.01 min.

Note: During a run, the integration task time is based on the time at which data collection begins in the Control.

The change is applied to the first peak whose end follows the Integration Task time. When applying an alternate baseline in a series of close peaks, choose a time that corresponds to the retention time of the first peak of interest.

3 Click **OK**.

To delete a Task

To remove a Task:

1 Right-click the Task.

2 Select **DELETE**.

To modify a Task

To change Task time:

1 Right-click the Task.

2 Select **EDIT**.

Baseline construction techniques

TRILUTION LC provides several baseline construction techniques. If you change the construction technique, the software uses the first affected peak to determine when to use the technique. The first affected peak is the peak whose end follows the scheduled time. Therefore, when applying an alternate construction technique within a series of peaks, enter a time that coincides with the peak retention time. Use these techniques sparingly and carefully so that data are analyzed in a meaningful way.

Accurate peak integration depends on the shape of the baseline, which in turn depends on the peak shape and on the resolution from neighboring peaks.

Note: Changes to the baseline construction technique remain in effect until the next baseline task is scheduled.

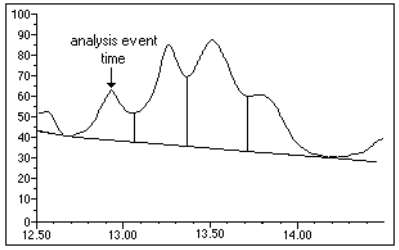
The drawings that follow demonstrate changes to a default baseline that can result from changing the peak parameters. Review the changes to the peak start and end points determined by the software. The arrow in each drawing indicates the analysis task time.

Default Baseline

To draw the baseline beneath qualified peaks, TRILUTION LC connects the start and end of each integrated peak.

If the software encounters merged peaks (no baseline resolution between peaks), it draws a “taut string” baseline from the first peak start to the next peak end that it finds. If any deep valleys interrupt the “taut string” baseline, the baseline is drawn from the peak start to the bottom of each valley and then to the peak end. The software then drops perpendiculars from all remaining valleys to the baseline to determine the baseline beneath each peak.

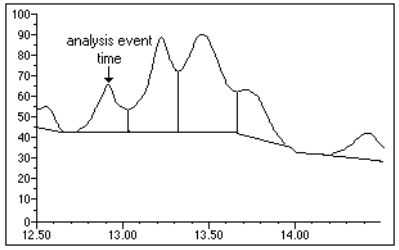
The default baseline technique is used unless you specify another technique. If the default baseline does not report optimal peak heights (or areas), choose one of the other techniques, described following.



Horizontal Baseline

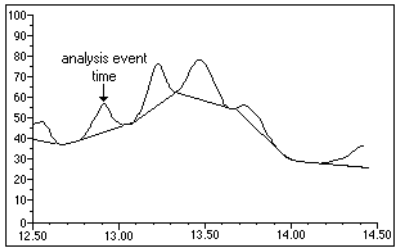
TRILUTION LC draws a forced horizontal baseline. Then, to determine the baseline beneath each peak, it drops perpendiculars from each peak start and each peak end to the horizontal baseline.

If the software encounters merged peaks (no baseline resolution between peaks) while using this technique, the horizontal baseline is maintained and perpendiculars are drawn from the valleys between peaks, rather than from peak starts and ends. If any peak end or valley falls below the horizontal, the baseline drops to that level and continues to be drawn at that level.



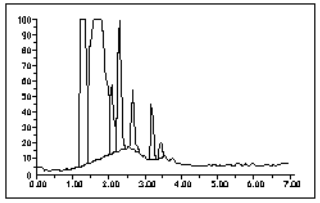
All Valleys

TRILUTION LC connects valleys between peaks to correct for temporary and gradual baseline drift respectively. The All Valleys option draws the baseline from valley to valley until the next baseline option is set.

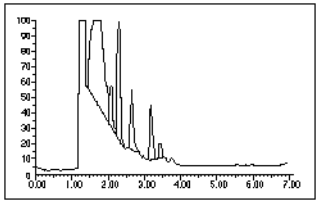


Tangent Skim

When you select this option, TRILUTION LC draws a baseline under the solvent front peak in addition to component peaks.



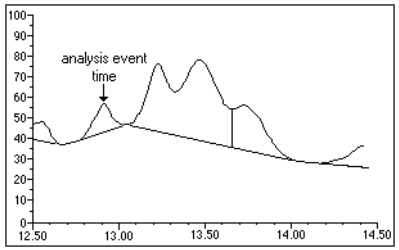
Default Baseline



Tangent Skim

Next Valley

TRILUTION LC connects valleys between peaks to correct for temporary and gradual baseline drift respectively. The Next Valley option forces the baseline to the next valley only.



Inhibit/Enable Integration

If a region of a trace is uninteresting to you or if a region contains many unresolved peaks, you can inhibit integration during that period. Schedule one task to inhibit integration. Then schedule another task for the time at which to resume integration. This technique can eliminate a large number of uninteresting peaks from being listed in reports.

Negative Peak

If a region of the chromatogram contains negative peaks, you can tell TRILUTION LC to integrate those peaks. Schedule one timed Task to enable integration. Then schedule another Task at the time to disable integration.

Peak Slope and Sensitivity

Peak slope is expressed in degrees and uses a default peak width of 0.2 min. You can specify a front slope and/or a back slope.

The sensitivity setting maximizes the amount of the peak that is integrated while minimizing the integration of baseline artifacts.

If few or no peaks are integrated, set a lower sensitivity value. If too many peaks are integrated, indicate a higher sensitivity value. You can specify a front sensitivity and/or a back sensitivity.

The Auto Calculate option, when set to TRUE (the default), allows you to set just a slope value and then TRILUTION LC automatically internally sets the corresponding sensitivity value for you. Select FALSE to type each value. To figure the auto calculated sensitivity value that will be used if you select TRUE, use the Sensitivity Calculator described on page 7-26.

Refer to the following table to find the slope of the peak and then enter the corresponding sensitivity. The table assumes a peak width setting of 1.0 and a data rate of 20 points/sec.

Peak Slope and Corresponding Peak Sensitivity

Slope	*Sensitivity*	*Slope*	*Sensitivity*	*Slope*	*Sensitivity*
0.5	1.643	30	108.698	60	326.094
1	3.286	31	113.124	61	339.649
2	6.575	32	117.645	62	354.086

Peak Slope and Corresponding Peak Sensitivity Table *(Page 1 of 3)*

Peak Slope and Corresponding Peak Sensitivity (Continued)

Slope	*Sensitivity*	*Slope*	*Sensitivity*	*Slope*	*Sensitivity*
3	9.867	33	122.264	63	369.502
4	13.165	34	126.990	64	386.012
5	16.472	35	131.829	65	403.748
6	19.788	36	136.787	66	422.863
7	23.117	37	141.872	67	443.538
8	26.460	38	147.093	68	465.986
9	29.819	39	152.459	69	490.462
10	33.197	40	157.978	70	517.270
11	36.596	41	163.661	71	546.778
12	40.018	42	169.520	72	579.438
13	43.466	43	175.565	73	615.806
14	46.941	44	181.811	74	656.578
15	50.447	45	188.271	75	702.636
16	53.986	46	194.960	76	755.113
17	57.560	47	201.896	77	815.490
18	61.173	48	209.096	78	885.744
19	64.827	49	216.581	79	968.569
20	68.525	50	224.372	80	1067.736
21	72.270	51	232.495	81	1188.695
22	76.066	52	240.976	82	1339.616
23	79.916	53	249.844	83	1533.342

Peak Slope and Corresponding Peak Sensitivity Table *(Page 2 of 3)*

Peak Slope and Corresponding Peak Sensitivity (Continued)

Slope	*Sensitivity*	*Slope*	*Sensitivity*	*Slope*	*Sensitivity*
24	83.824	54	259.132	84	1791.276
25	87.792	55	268.878	85	2151.944
26	91.826	56	279.123	86	2692.397
27	95.929	57	289.912	87	3592.420
28	100.105	58	301.296	88	5391.368
29	104.360	59	313.335	89	10786.023

Peak Slope and Corresponding Peak Sensitivity Table *(Page 3 of 3)*

Start/Stop Integration by Fraction Collection

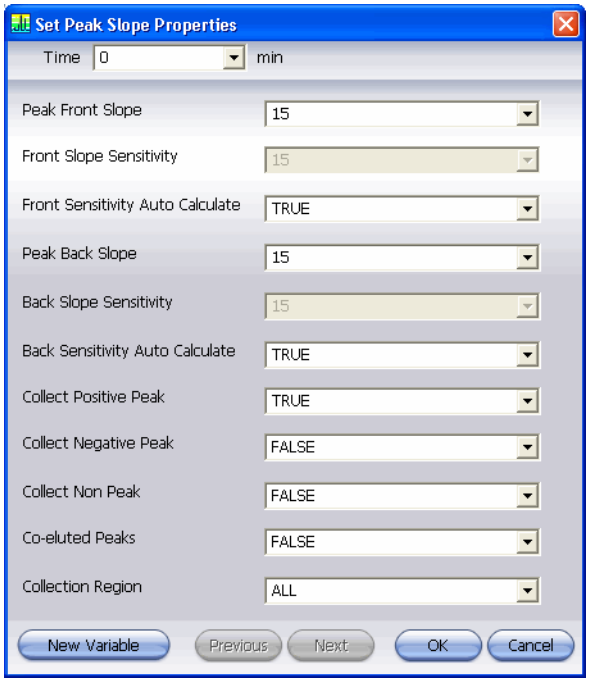
Uses slope —specified either in the Control or in the Analysis—to determine the integration baseline and uses the fraction collection start and stop lines for the start and end of the baseline. If both are specified, TRILUTION LC uses the slope from the Control. If no slope is specified in the Control or the Analysis, the baseline is drawn at the intersection of the trace with the fraction collection start and stop lines.

Collecting fractions by slope

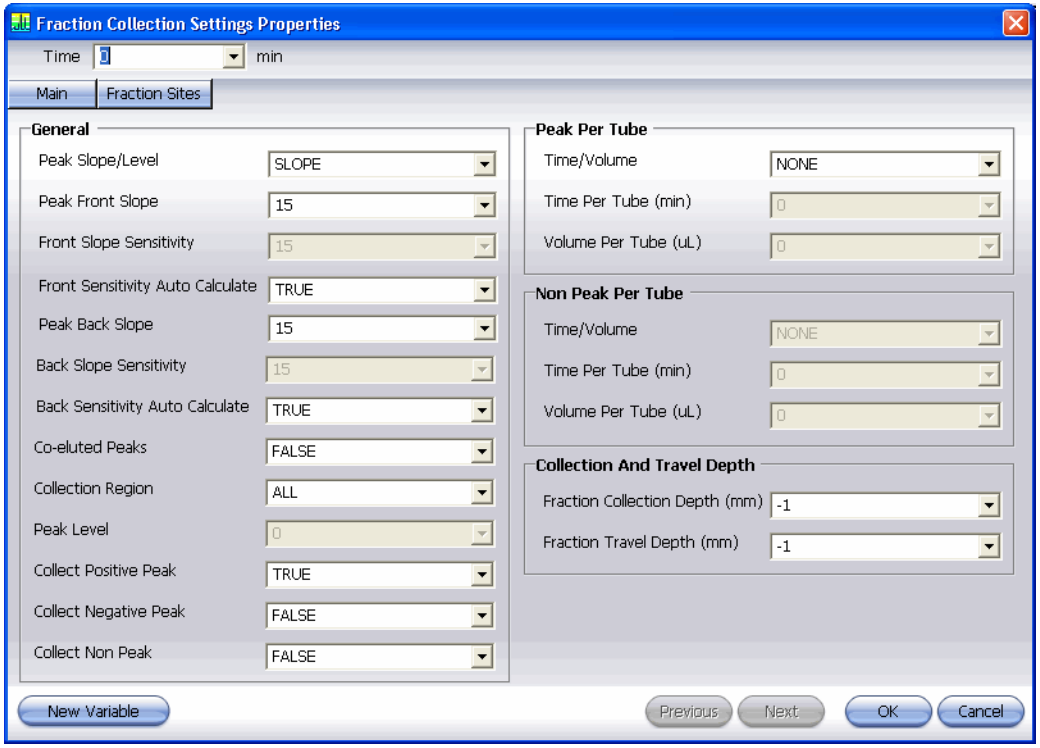
When collecting fractions by slope, fraction collection start and end lines are determined according to the settings in the fraction collection task in the Control (Fraction Collection Settings or Set Peak Slope). The slope in the fraction collection task also determines the start and stop of integration. Baseline type is set in the Analysis.

Collecting sub fractions

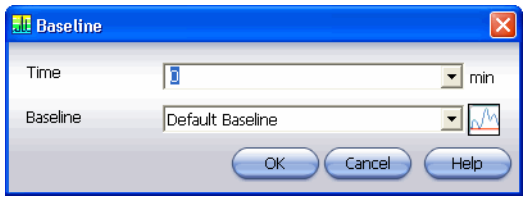
When collecting fractions by slope, it is possible to collect peaks within peaks (sub fractions) by time or volume. Sub fractions are collected according to the settings in the Fraction Collection Settings task (Peak Per Tube) or the Peak Per Tube task. Vertical integration lines are drawn within the peak in addition to the baseline drawn according to the baseline type set in the Analysis.



Set Peak Slope Task Properties (Control)



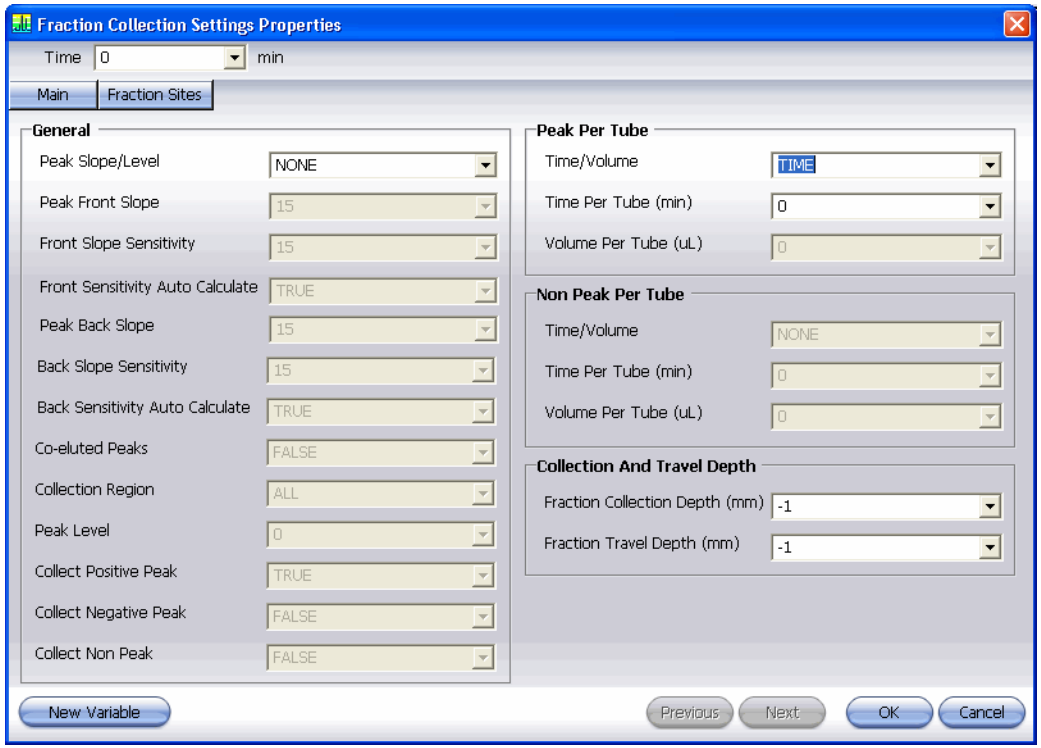
Fraction Collection Settings Task Properties - Slope Selected (Control)



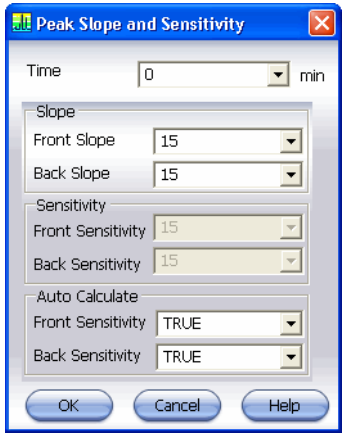
Baseline Setting (Analysis)

Collecting fractions by time or volume

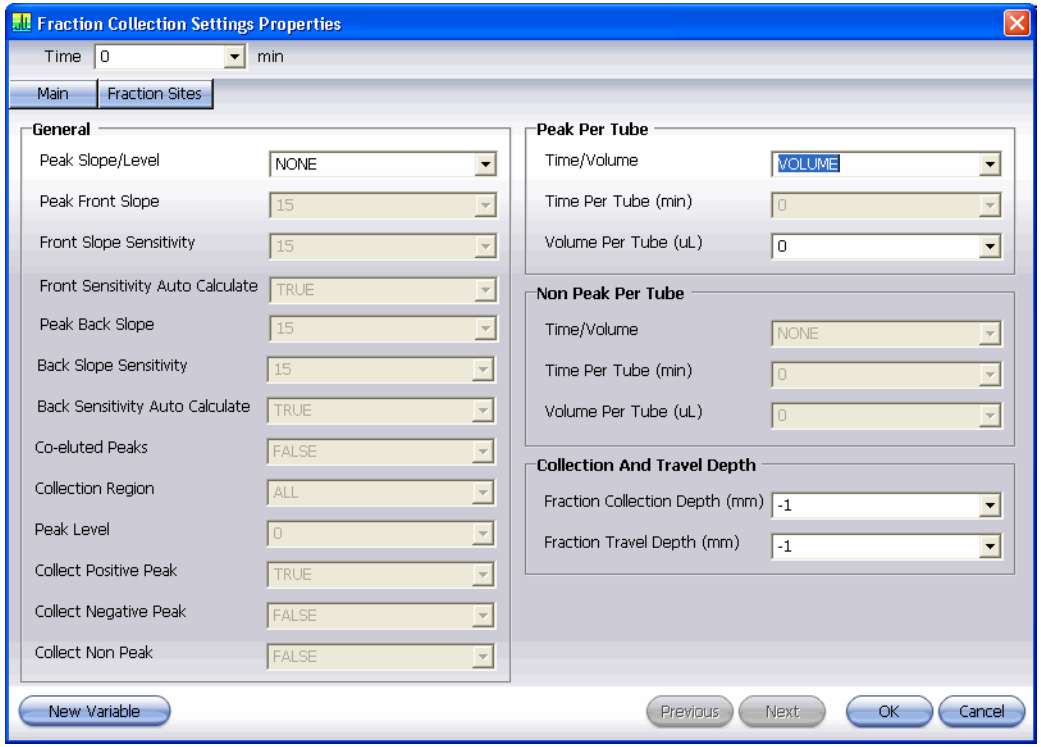
When collecting fractions by either time or volume, fraction collection start and end lines are determined according to the settings in the fraction collection task (Fraction Collection Settings or Set Peak per Tube). The slope indicated in the Peak Slope and Sensitivity task in the Analysis is used to determine the start and stop of integration. Baseline type is set in the Analysis.



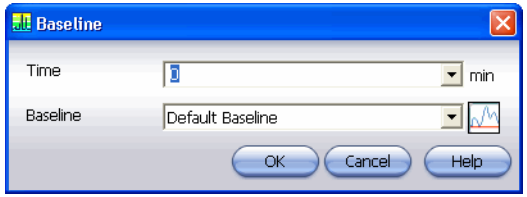
Fraction Collection Settings Properties - Time Selected (Control)



Peak Slope and Sensitivity (Analysis)



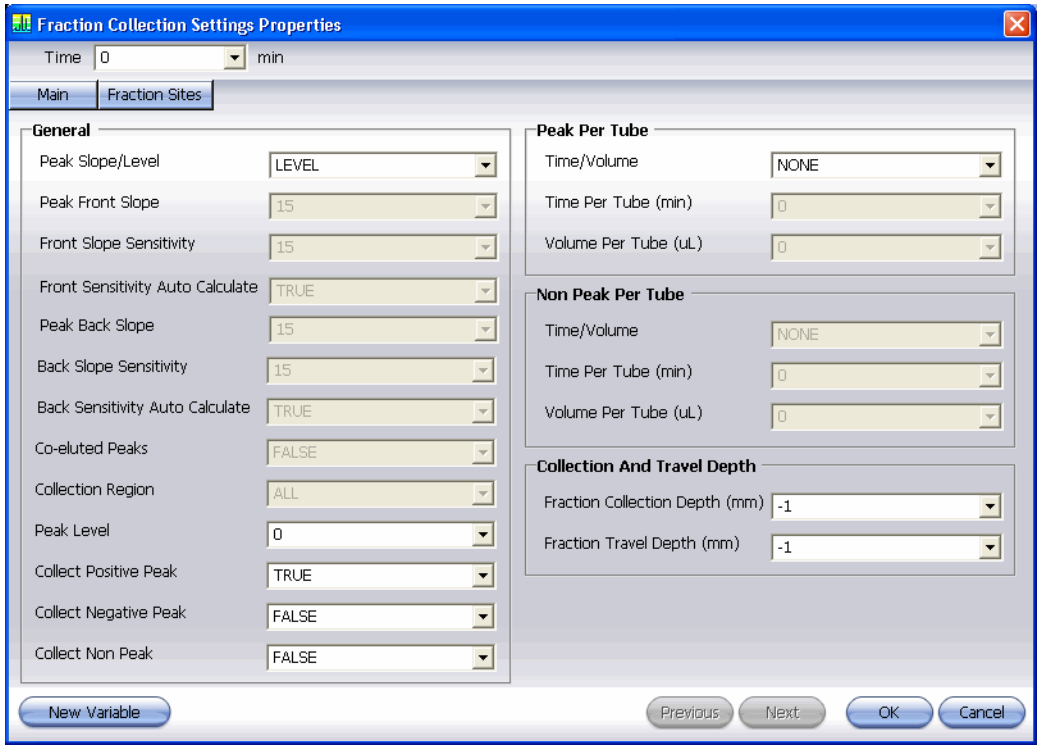
Fraction Collection Settings Properties - Volume Selected (Control)



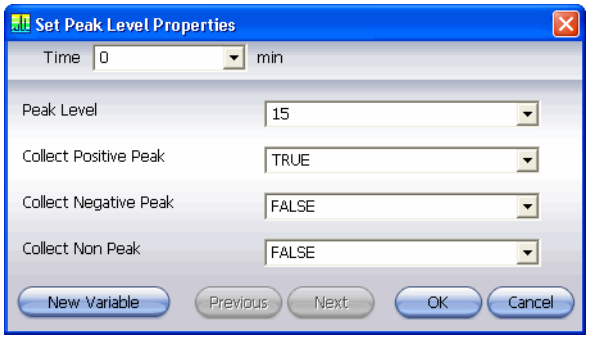
Baseline Setting (Analysis)

Collecting fractions by level

When collecting fractions by level, fraction collection start (dashed, red vertical line) and end lines (solid, green vertical line) are determined according to the settings in the fraction collection task in the Control (Fraction Collection Settings or Set Peak Level).

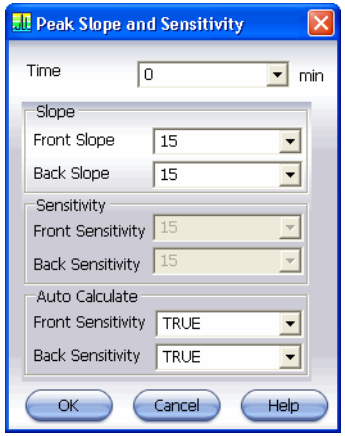


Fraction Collection Settings Task Properties - Level Selected (Control)

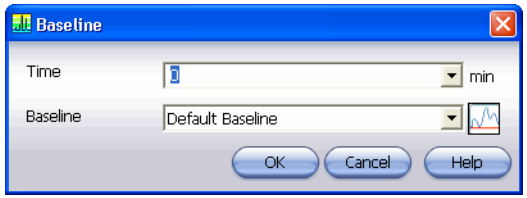


Set Peak Level Task Properties (Control)

The slope indicated for Peak Slope and Sensitivity task in the Analysis is considered when determining the analysis start (arrow down) and analysis end (arrow up). Baseline type is set in the Analysis.



Peak Slope and Sensitivity (Analysis)



Baseline Setting (Analysis)

The following diagrams show how the integration of a peak differs when integrating by fraction collection. For this example, the analysis start and end are outside the fraction collection window.

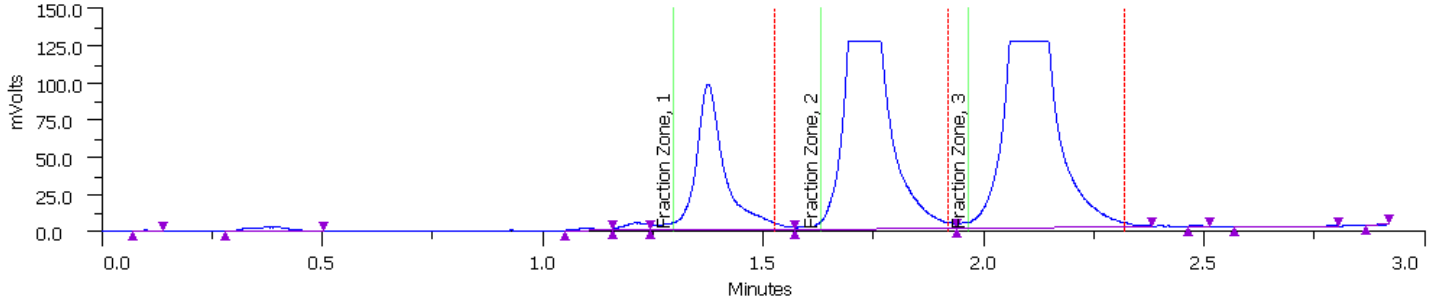


Diagram 1: Fraction Collection by Level - Integration by Peak Slope and Sensitivity

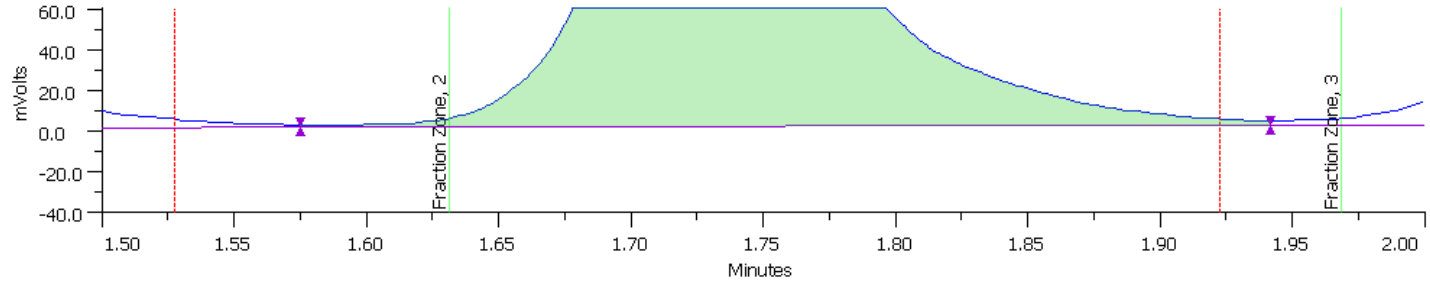


Diagram 1a: Fraction Collection by Level - Integration by Peak Slope and Sensitivity

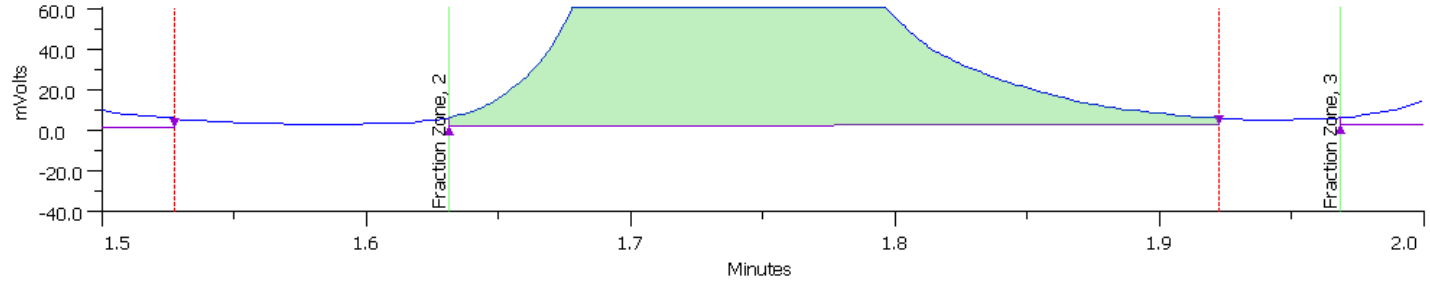
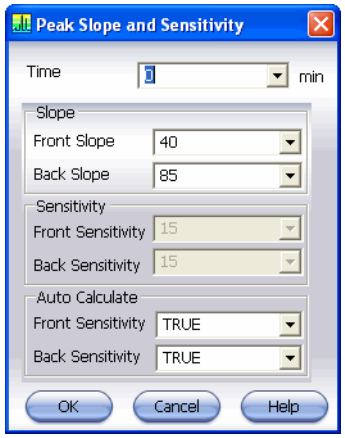


Diagram 1b: Fraction Collection by Level - Integration by Fraction Collection

The following diagrams also show how the integration of a peak differs when integrating by fraction collection. For this example, the back slope set in the Peak Slope and Sensitivity task in the analysis is greater than the front slope and one analysis point is inside the fraction collection window.



Peak Slope and Sensitivity (Analysis)

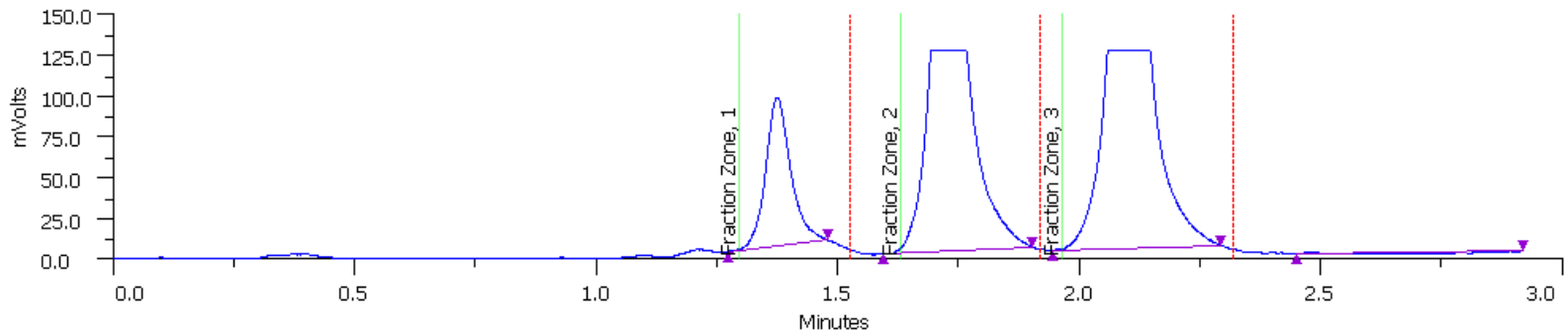


Diagram 2: Fraction Collection by Level - Integration by Peak Slope and Sensitivity

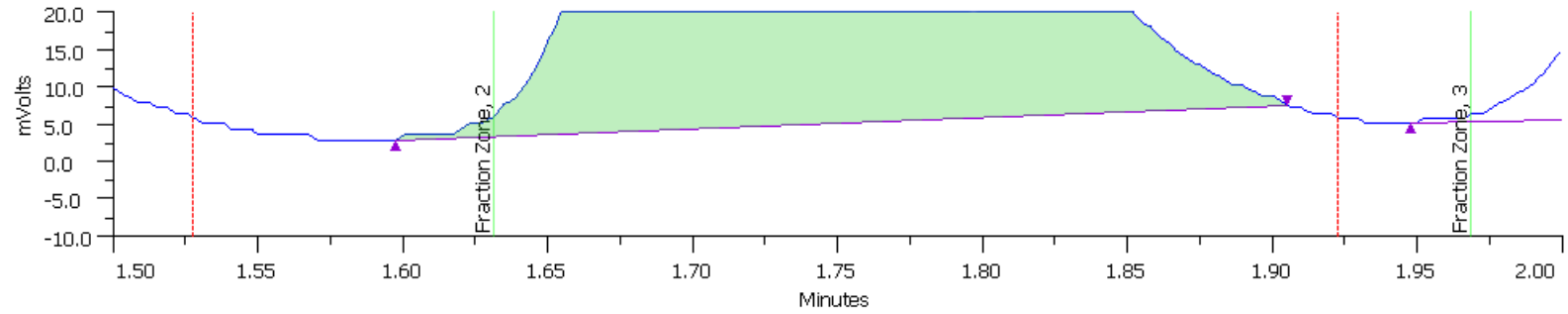


Diagram 2a: Fraction Collection by Level - Integration by Peak Slope and Sensitivity

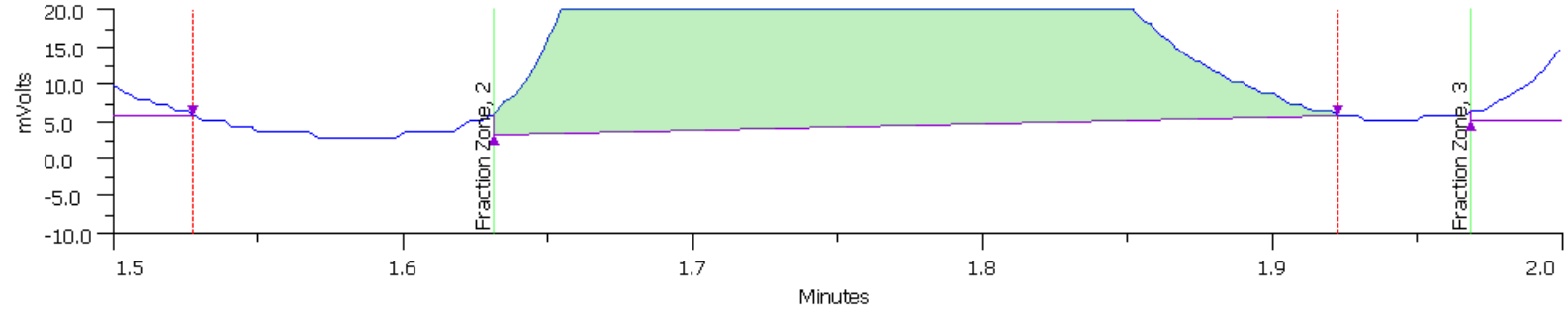


Diagram 2b: Fraction Collection by Level - Integration by Fraction Collection

Sensitivity Calculator

The sensitivity calculator ( ), uses internal mathematical tables to determine a slope sensitivity based on a specified peak slope, peak width, and data rate.

To use the calculator:

1 Type the known values.

2 Click **CALCULATE**.

Peak Width

The Peak Width ( ) Info dialog allows you to enter an average peak width for the chromatogram. Peak width sets the appropriate scale for auto calculate to use. Set one peak width for all analyses.

Application Run Results

To overlay results from a previous run, click the Application Run Results tool ( ). This displays the Application Run Results dialog in which you can select the results from a previous run.

Peak Table

The Peak Table is where you tell TRILUTION LC about the peaks in data analyzed by the Analysis. If you name peaks in the peak table, your reports refer directly to those peaks when reporting areas, heights, amounts, and so on.

Retention Time

Retention time is the retention time for the peak. The limit of resolution is hundredths of a minute (0.01 min).

Peak retention time is based on start of data collection indicated in the Control executed at the same time as the Analysis. If the beginning of data collection and injection are not synchronous, retention times reported deviate from actual retention times by their difference.

Name

In the Peak Table, you indicate peak names and their retention times. You get retention time information by injecting and acquiring traces for test samples.

Identify each peak for the component it represents.

Note: Reports are limited to displaying 20 characters for the peak name.

Reference Peak (optional)

The software uses reference peaks to correct for retention time shifts that can occur during runs that analyze multiple samples. When the software notices a difference between a reference peak's expected and actual retention times, it adjusts the retention times of the preceding non-reference peaks in its internal peak table.

You can designate an unlimited number of reference peaks in both calibration and unknown samples. An ideal reference peak is a large isolated peak with a consistent retention time. You can designate several reference peaks with retention times at the beginning, middle, and end of the run. If you designate just one reference peak, it should be a late-eluting peak.

Group

When you right-click on a row in the Peak Table and then select **GROUP..**, options for grouping peaks appear in the Peak Group dialog. TRILUTION LC reports total area for all peaks selected in addition to the area of each individual peak.

Setting up group names

To indicate group names:

1 In the Peak Group dialog, type a name in the ***Group*** field.

2 Click **INSERT**. The group name is added to the list.

3 Select the group name from the list.

4 Click **GROUP**.

Grouping peaks

1 Select the row in the Peak Table.

2 Right-click and then select **GROUP...**.

3 Select the group name from the list.

4 Click **GROUP**.

5 Repeat steps 1 through 4 to assign other peaks to groups.

6 To remove a peak from a group, choose its name in the list and click **UNGROUP**.

Deleting group names

To delete group names:

1 Right-click the group name.

2 Select **DELETE**.

IntStd (Internal Standard)

When you select the IntStd check box, you indicate that the peak is an internal standard. Indicate the time frame during which to use the standard.

Start Time

Start Time is the time at which to begin using the internal standard.

End Time

End Time is the time at which to stop using the internal standard. It must be later than the Start Time.

Absolute Error and Relative Error

These are the retention time window parameters. To compensate for possible retention time drift, TRILUTION LC defines a window around the retention time for each peak. If a peak elutes at any time during that window, the software identifies it.

Absolute error is a constant amount of time on either side of a peak's nominal retention time. The software automatically searches for eluted peaks at every named retention time plus or minus this amount of time.

Relative error is a percentage of peak retention time. Relative error, and, therefore, the width of retention time windows, increases with increasing retention time. Because late-eluting peaks are often broader than early peaks, the software uses this correction factor to improve the likelihood of locating late-eluting peaks.

TRILUTION LC uses the following formulas to calculate the beginning and end of any peak's time window. Each peak's time window appears in the graph pane.

Beginning: Ret. Time - [Abs. Error + (Ret. Time x Rel. Error)]

End: Ret. Time + (Abs. Error + Ret. Time x Rel. Error)

Color

Double-click to select from available color fills for the peak. The default is black.

Inserting peaks

If additional rows are needed in the table to add more peaks, right-click and then select **INSERT**.

Deleting peaks

To delete the information for a peak:

1 Select the row for that peak in the Peak Table.

2 Right-click in the row and select **DELETE**.

Updating chromatogram

After making changes to the Peak Table or the Peak Width, click the Update Chromatogram icon ( ) and the changes are reflected in the graph.

To remove the peak windows from the graph, right-click on the graph and then select **DELETE PEAK WINDOW**.

Graph Pane

The graph pane shows a graphic representation of timed tasks and peak retention time windows.

Background Removal

When you select the Background Removal check box and you set the Sample Type for the first sample in the Sample List as BLANK, you indicate that its data will be subtracted from sample data during the run during re-analysis processing.

Clearing the Background Removal check box indicates that you do not want TRILUTION LC to perform background subtraction.

Calibration

When this box is checked, the Calculation dialog displays. The calculation dialog includes options for indicating how to construct calibration curves.

When analyzing a sample, the software determines the peak area (or height) for each named component. For each peak, the software generates a calibration curve to determine the amount of that component in each unknown sample.

A component's calibration curve plots the average peak area (or height) versus the amount injected.

Type

Area

Tells TRILUTION LC to generate the curve based on the area of each standard peak.

Height

Tells TRILUTION LC to generate the curve based on the height of each standard peak.

External Calibration

Tells TRILUTION LC to generate the curve based on a previous calibration run. When this type is selected, the **BROWSE...** button becomes active to load an external calibration.

Internal Standard

Tells TRILUTION LC that an internal standard will be used. You must then select whether to quantify the standard peaks by area or height when generating the curve.

Curve Fit

Cubic

TRILUTION LC generates a smooth curve that best represents the set of means. The curve may have two bends.

To determine the amount of that component in an unknown sample, the software determines where that component's peak area intersects the calibration curve.

Linear

Using a best-fit method, TRILUTION LC constructs a line that best represents the set of means. This method minimizes the sum of the squares of the error distance between each mean and the line.

Linear through Zero

Using a best-fit method, TRILUTION LC constructs a line that best represents the set of means and includes the origin (0 area, 0 height) as a point.

Point to Point

TRILUTION LC connects the mean amount for each standard using a linear segment. For a single-standard calibration plot, TRILUTION LC generates a linear segment between the origin (0 area or 0 height, 0 amount) and mean peak area at the amount.

Quadratic

TRILUTION LC generates a smooth curve that best represents the set of means. The curve may have one bend.

Track Retention Times

When this box is checked, TRILUTION LC automatically corrects for retention time shifts that may occur during a run in which multiple samples are injected. When the software notices a difference between a peak's expected and actual retention times, it adjusts the retention times for all peaks so they are integrated.

Void Volume Retention Time

This is the retention time of unretained effluent. This value is used to calculate capacity factor (k').

Custom Calculation

Custom Calculation allows you to type a formula that TRILUTION LC will use to generate the amount that appears in a column in the table in the report. You specify a name for this expression and then add it to the column contents for the report.

The Custom Calculation dialog lists TRILUTION LC quantities and mathematical operators that can be used in your calculation. The following table provides a description of each calculable quantity.

Calculable Quantity	*Description*	*Syntax*	*Example(s)*
AMOUNT	Returns the peak amount	AMOUNT(Peak number) where the argument (Peak number) is optional when used as a column quantity	Example 1: AMOUNT returns the corresponding peak amount from the sample list Example 2: AMOUNT(1) returns the peak amount for peak 1 from the sample list

Calculable Quantity	*Description*	*Syntax*	*Example(s)*
AMOUNT_IS	Returns the internal standard amount	AMOUNT_IS(Peak number)	Example 1: AMOUNT_IS returns the corresponding internal standard amount from the sample list Example 2: AMOUNT_IS(1) returns the internal standard amount for peak 1 from the sample list
AMOUNT_%	Returns the peak's amount as a percentage of the total amount calculated for all named peaks in the sample	AMOUNT_%(Peak number) where the argument within the brackets (Peak number) is optional when used as a column quantity	Example 1: AMOUNT_% returns the corresponding amount percent from the sample list Example 2: AMOUNT_%(1) returns the amount percent for peak 1 from the sample list
AREA	Returns the peak area	AREA(Peak number) where the argument (Peak number) is optional when used as a column quantity	Example 1: AREA returns the corresponding area for each integrated peak Example 2: AREA(1) returns the area for peak 1 for each integrated peak

Calculable Quantity	*Description*	*Syntax*	*Example(s)*
AREA_%	Returns the peak's area as a percentage of the total area of all integrated peaks in the sample	AREA_%(Peak number) where the argument (Peak number) is optional when used as a column quantity	Example 1: AREA_% returns the corresponding area percent for each integrated peak Example 2: AREA_%(1) returns the area percent for peak 1 for each integrated peak
ASYMMETRY	Returns the peak's asymmetry, a value that identifies the shape of the peak	ASYMMETRY[(Peak number)] where the argument within the brackets, (Peak number), is optional	Example 1: ASYMMETRY returns the corresponding asymmetry value from the peak table Example 2: ASYMMETRY(1) returns the asymmetry value for peak 1 from the peak table

Calculable Quantity	*Description*	*Syntax*	*Example(s)*
BACK_RESOLUTION	Returns the resolution of a peak in relation to the next peak	BACK_RESOLUTION[(Peak number)] where the argument within the brackets, (Peak number), is optional	Example 1: BACK_RESOLUTION returns the corresponding back resolution from the peak table Example 2: BACK_RESOLUTION(1) returns the back resolution for peak 1 from the peak table
BACK_SLOPE	Returns the slope at half height of the peak's descending edge	BACK_SLOPE[(Peak number)] where the argument within the brackets, (Peak number), is optional	Example 1: BACK_SLOPE returns the corresponding back slope from the peak table Example 2: BACK_SLOPE(1) returns the back slope for peak 1 from the peak table
CAPACITY	Returns the capacity factor (k'), which measures the degree of retention	CAPACITY[(Peak number)] where the argument within the brackets, (Peak number), is optional	Example 1: CAPACITY returns the corresponding capacity factor from the peak table Example 2: CAPACITY(1) returns the capacity factor for peak 1 from the peak table

Calculable Quantity	*Description*	*Syntax*	*Example(s)*
END TIME	Returns the time point at which integration stopped for the peak	END_TIME(Fractional peak height, Peak number) where the Fractional peak height argument is required and Peak number argument is optional when used as a column quantity	Example 1: END TIME(0) returns the corresponding end time at baseline from the peak table Example 2: END TIME((0.05, 1) returns the end time at 5 percent for peak 1 from the peak table
END_VALUE	Returns the returns the mV value at which integration stopped for the peak	END_VALUE[(Peak number)] where the argument within the brackets, (Peak number), is optional	Example 1: END_VALUE returns the corresponding ending mV value from the peak table Example 2: END_VALUE(1) returns the ending mV value for peak 1 from the peak table
FRACTION_SITES	Returns the tube location(s) in which the peak was collected	FRACTION_SITES[(Peak number)] where the argument within the brackets, (Peak number), is optional	Example 1: FRACTION_SITES returns the corresponding fraction sites for each collected peak Example 2: FRACTION_SITES(1) returns the fraction site(s) for peak 1 for each collected peak

Calculable Quantity	*Description*	*Syntax*	*Example(s)*
FRONT_RESOLUTION	Returns the resolution of the peak in relation to the previous peak	FRONT_RESOLUTION[(Peak number)] where the argument within the brackets, (Peak number), is optional	Example 1: FRONT_RESOLUTION returns the corresponding front resolution from the peak table Example 2: FRONT_RESOLUTION(1) returns the front resolution for peak 1 from the peak table
FRONT_SLOPE	Returns the slope at half height of the peak's ascending edge	FRONT_SLOPE[(Peak number)] where the argument within the brackets, (Peak number), is optional	Example 1: FRONT_SLOPE returns the corresponding front slope from the peak table Example 2: FRONT_SLOPE(1) returns the front slope for peak 1 from the peak table
HEIGHT	Returns the distance from the baseline to the maximum of the peak. The peak height is given in millivolts	HEIGHT(Peak number) where the argument (Peak number) is optional when used as a column quantity	Example 1: HEIGHT returns the corresponding peak height from the peak table Example 2: HEIGHT(1) returns the peak height for peak 1 from the peak table

Calculable Quantity	*Description*	*Syntax*	*Example(s)*
HEIGHT_%	Returns a peak's height as a percentage of the total height of all integrated peaks in the sample	HEIGHT_%(Peak number) where the argument (Peak number) is optional when used as a column quantity	Example 1: HEIGHT_% returns the corresponding peak height percent from the peak table Example 2: HEIGHT_%(1) returns the peak height percent for peak 1 from the peak table
%_CONC	Returns the peak's percent concentration (as related to the total sample amount) of each reported peak	PCT_CONC(Peak number) where the argument (Peak number) is optional when used as a column quantity	Example 1: %_CONC returns the corresponding percent concentration from the peak table Example 2: %_CONC(1) returns the percent concentration for peak 1 from the peak table
PEAK_NAME	Returns the description assigned to the peak in the analysis method's peak table	PEAK_NAME(Peak number) where the argument (Peak number) is optional when used as a column quantity	Example 1: PEAK_NAME returns the corresponding peak name from the peak table

Calculable Quantity	*Description*	*Syntax*	*Example(s)*
PLATE_NUMBER	Returns the plate number, a value that indicates column efficiency	PLATE_NUMBER[(Peak number)] where the argument within the brackets, (Peak number), is optional	Example 1: PLATE_NUMBER returns the corresponding plate number from the peak table Example 2: PLATE_NUMBER(1) returns the plate number for peak 1 from the peak table
RETENTION_TIME	Returns the elapsed time between the point of injection and maximum of the peak	RETENTION_TIME(Peak number) where the argument (Peak number) is optional when used as a column quantity	Example 1: RETENTION_TIME returns the corresponding retention time from the peak table Example 2: RETENTION_TIME(1) returns the retention time for peak 1 from the peak table

Calculable Quantity	*Description*	*Syntax*	*Example(s)*
START_TIME	Returns the time point at which integration began for the peak	START_TIME(Fractional peak height, Peak number) where the Fractional peak height argument is required and Peak number argument is optional when used as a column quantity	Example 1: START_TIME(0) returns the corresponding start time at peak baseline from the peak table Example 2: START_TIME(0.05, 1) returns the start time at 5 percent for peak 1 from the peak table
START_VALUE	Returns the mV value at which integration began for the peak	START_VALUE(Peak number) where the argument within the brackets, (Peak number), is optional	Example 1: START_VALUE returns the corresponding starting mV value from the peak table Example 2: START_VALUE(1) **returns the starting mV value for peak 1 from the peak table**

Calculable Quantity	*Description*	*Syntax*	*Example(s)*
TAILING_FACTOR	Returns the tailing factor	TAILING_FACTOR(Fractional peak height, Peak number) where the Fractional peak height argument is required and Peak number argument is optional when used as a column quantity	Example 1: TAILING_FACTOR(0.05) returns the corresponding 5 percent tailing factor from the peak table Example 2: TAILING_FACTOR(0.10, 1) returns the 10 percent tailing factor for peak 1 from the peak table
WIDTH	Returns the peak width	WIDTH(Fractional peak height, Peak number) where the Fractional peak height argument is required and Peak number argument is optional when used as a column quantity	Example1: WIDTH(0) returns the baseline peak width from the peak table Example 2: WIDTH(0.5) returns the peak width at half height from the peak table Example 3: WIDTH(0.5,1) returns the peak width at half height for peak 1 from the peak table

Report Tab

The report tab provides options for setting reporting conditions and report formats for the Analysis, Calibration, and Summary Reports.

Report Template

Select from two different templates.

Include All

Select this check box and TRILUTION LC reports information about every peak that meets its integration requirements. Clear the check box (and set the appropriate parameters, described following) to get information only about the peaks of interest.

Unnamed Peaks

If you want TRILUTION LC to report information about every peak that meets its integration requirements, select this check box (and set the appropriate parameters, described following). If you only want information on peaks named in the peak table, clear this check box.

If the software integrates peaks that have not been named in the peak table, it assigns the peak a name based on the order in which it eluted. For example, the peak table named two peaks, Phenol and Benzaldehyde. However, during the run, the software detects a peak between those two peaks. The unnamed peak would be labeled “PN: 1”.

Minimum Area

You can specify a minimum valid peak area to exclude insignificant peaks from reports. Unnamed peaks with area smaller than the specified value are not reported.

Maximum Area

You can specify a maximum valid peak area. Unnamed peaks with area greater than the specified value are not reported.

Minimum Height

You can specify a minimum valid peak height to exclude insignificant peaks from reports. Unnamed peaks with height smaller than the specified value are not reported.

Maximum Height

You can specify a maximum valid peak height. Unnamed peaks with height greater than the specified value are not reported.

Report Column Format

Report Type

Four report types can be modified. A description of the types follows.

Sample: This table is optionally included in the Analysis Report.

Sample Summary: This table is included in the Unknown Summary Report.

Calibrator: This option is only available if the method has been specified as a Calibration method. This table is optionally included in the Calibration Report.

Calibration Summary: This option is only available if the method has been specified as a Calibration method. This table is included in the Standard Summary Report.

Report column format review and modification

If you want to vary the default format for reports, you can add or remove column information.

Checking columns

To view what is printed for each report, on the Method Analysis Report tab, select the report type from the drop-down list.

Report contents

To set report contents:

1 Select a Report Type from the drop-down list.

2 Select the information type to be added to the report from the Contents list.

3 Click the right arrow ( ) to add the information to Column Contents and to the report.

4 Click the up ( ) or down ( ) arrow to reorganize the columns. Columns listed up to down in the Column Contents will appear left to right in the report.

% Concentration

$$\% \text{ Concentration} = \frac{\text{Peak Amount}}{\text{Sample Amount}} \times 100$$

% Deviation

Calculated for samples marked CONTROL only.

((Nominal Amount – Unknown Amount)*100)/Nominal Amount

Amount

The actual amount entered in the Sample List for a standard or the calculated amount for an unknown.

Amount %

Percentage of the peak in relation to the total amount of all named peaks.

$$\text{Amount \%} = \frac{\text{Amount for Peak}}{\sum \text{Amounts for All Named Peaks}} \times 100\%$$

Area

Area of the integrated peak.

Area %

$$\text{Area \%} = \frac{\text{Area for Peak}}{\sum \text{Areas of All Peaks with Areas Greater than Minimum Area in Analysis}} \times 100\%$$

Back Resolution

Resolution of a peak in relation to the next peak.

$$\text{Back Resolution} = 2 \times \frac{\text{Resolution Time of Next Peak - Retention Time of Peak}}{\text{Baseline Width of Next Peak + Baseline Width of Peak}}$$

Back Slope

Slope at half height of peak's descending edge.

Capacity (k')

Measures the degree of retention.

$$\text{Capacity} = \frac{\text{Retention Time of Peak - Retention Time of Unretained Peak}}{\text{Retention Time of Unretained Peak}}$$

Covariance

$$\text{Covariance} = \frac{\text{Standard Deviation}}{\text{Mean}} \times 100\%$$

End Value

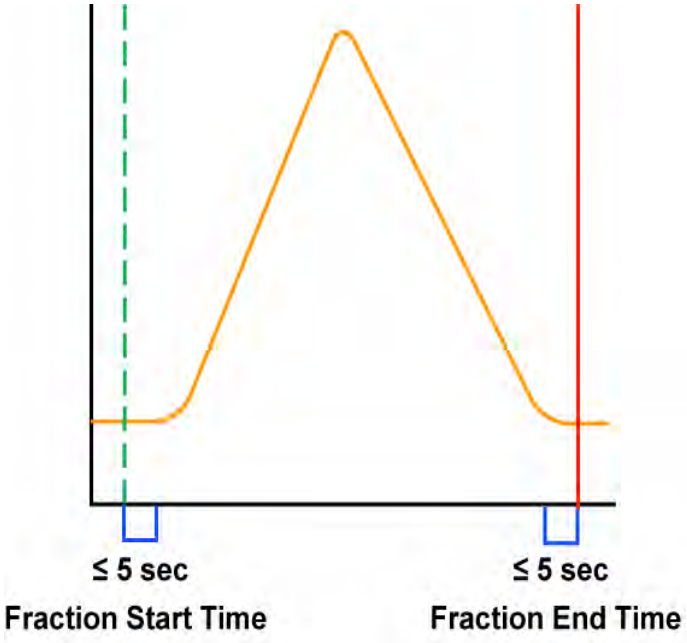
The mV at the end of the peak.

Fraction Area

The sum of the sub-fraction areas.

Fraction End Time

Elapsed time between the point of injection and the end of a fraction that occurs within 5 seconds of the end of the peak.

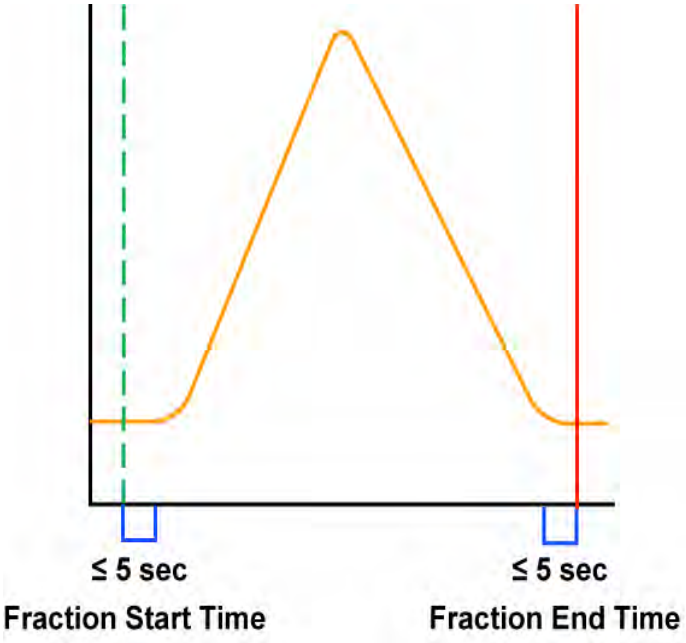


Fraction Site(s)

The location to which fractions for the peak are collected. Reported as Zone, Well Number(s).

Fraction Start Time

Elapsed time between the point of injection and the start of a fraction that occurs within 5 seconds of the start of the peak.



Front Resolution

Resolution of a peak in relation to the previous peak.

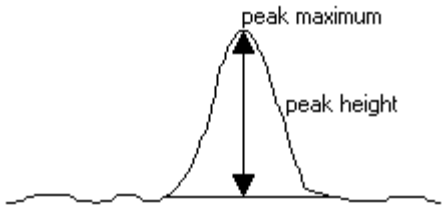
$$\text{Front Resolution} = 2 \times \frac{\text{Retention Time of Peak - Retention Time of Previous Peak}}{\text{Baseline Width of Peak + Baseline Width of Previous Peak}}$$

Front Slope

Slope at half height of peak's ascending edge.

Height

Distance from the baseline to the maximum of the peak.



Height %

$$\text{Height \%} = \frac{\text{Height for Peak}}{\sum \text{Heights of All Peaks with Heights Greater than Minimum Height in Analysis}} \times 100\%$$

Injection Number

The number of the injection that corresponds to the peak.

Mean Area

$$\text{Mean} = \frac{\sum x}{n}$$

where x is a measurement (area or height) and n is the number of measurements.

Nominal Amount

The nominal amount entered in the Sample List.

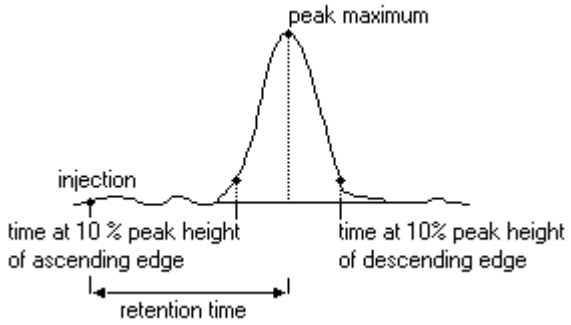
Number Average

The total number of injections.

Peak Asymmetry

Factor that identifies the shape of the peak. If this value is 1, the peak is symmetric. If the peak is skewed to the right (tailing peak), this value is greater than 1. If the peak is skewed to the left (fronting peak), this value is less than 1.

$$\text{Peak Assymetry} = \frac{\text{Time at 10\% Peak Height of Descending Edge - Retention Time}}{\text{Retention Time - Time at 10\% Peak Height of Ascending Edge}}$$



Peak End Time

Elapsed time between the point of injection and the end of the peak.

Peak Name

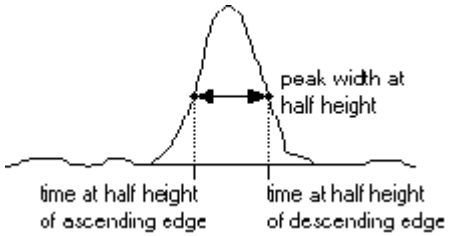
Name assigned to the peak in the peak table.

Peak Start Time

Elapsed time between the point of injection and the start of the peak.

Peak Width 1/2 HT

Peak Width at Half Height =
Time at Half Height of Descending Edge -
Time at Half Height of Ascending Edge



Peak Width 10%

Peak Width at 10% =
Time at 10% Height of Descending Edge -
Time at 10% Height of Ascending Edge

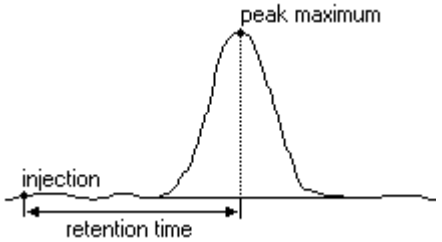
Plate Number

This value can be used to determine column efficiency.

$$\text{Plates} = \left[\frac{\text{Retention Time}}{\text{Peak Width at Half Height}}\right]^2 \times 5.545$$

Retention Time

Elapsed time between the point of injection and the maximum of the peak.



Sample Description

The sample description assigned in the Sample List.

Sample Location

The location of the original sample. Reported as Zone, Well Number.

Standard Deviation

Square Root (Number of Observation * Summation(square(value)) – Square(Summation(value)) / (Number of Observations * (Number of Observations – 1)))

Start Value

The mV at the start of the peak.

Sub Fraction Area

The area of each sub fraction of a peak. When added together, the sum is the fraction area.

Tailing Factor

$$\text{Tailing Factor} = \frac{\text{Time at 5\% Peak Height of Descending Edge - Time at 5\% Peak Height of Ascending Edge}}{2 * (\text{Retention Time - Time at 5\% Peak Height of Ascending Edge})}$$

Changing the position of a column

To move a column:

1 Select the column in the Column Contents list box.

2 Click on the up ( ) and down ( ) arrows to change the position of the column in the report. The top column will be the left-most column in the report.

Analysis Report Elements

A report can contain any or all of the following:

- Annotation
- Graph
- Sample Table
- Run Variables
- Grouped Peaks

Select the check box for each element to include.

Annotation

You can choose which parts of the report's annotation will be viewed and printed. To make your selections:

1 On the Method Builder Analysis Report tab, click **ANNOTATION CONTENTS... .**

2 When the Annotation Contents dialog appears, use the check boxes to turn off or on parts of the annotation.

Graph

You can choose how peaks are labeled in the report's graph.

1 On the Method Builder Analysis Report tab, click **GRAPH SETTINGS... .**

2 When the Peak Information and Graph Settings dialog appears, use the check boxes to turn off or on labels on the graph.

3 Specify the size of the chromatogram (Graph Size) as a percentage of the page. The graph is printed on a different page than the annotation, if necessary.

4 Optionally, add the grid line to the graph (select the check box) and change the grid color.

Sample Table

The columns in the table are chosen in the Report Column Format when Sample is specified as the Report Type. The default columns are Injection Number, Peak Name, Retention Time, Area, Height, Sample Name, Sample Location, and Fraction Site(s). See **Report column format review and modification** on page 7-47.

Run Variables

If this check box is selected, variables shown in the sample list will be reported with the values used to satisfy those variables.

Grouped

If this check box is selected, the sum total area for all grouped peaks will be calculated and displayed in the report.

Calibration Report Elements

A Calibration Report can contain any or all of the following:

- Annotation
- Graph
- Sample Table
- Run Variables
- Plot
- Plot Table

Select the check box for each element to include. The check boxes for the Plot and Plot Table are found in the Calibration Contents dialog.

Annotation

You can choose which parts of the Calibration Report's annotation will be viewed and printed. To make your selections:

1 On the Method Builder Analysis Report tab, click **ANNOTATION CONTENTS...** .

2 When the Annotation Contents dialog appears, use the check boxes to turn off or on parts of the annotation.

Graph

You can choose how peaks are labeled in the report's chromatograms.

1 On the Method Builder Analysis Report tab, click **GRAPH SETTINGS...** .

2 When the Peak Information and Graph Settings dialog appears, use the check boxes to turn off or on labels on the chromatograms.

3 Specify the size of the chromatogram (Graph Size) as a percentage of the page.

4 Optionally, add the grid line to the chromatograms (select the check box) and change the grid color.

Sample Table

The columns in the table are chosen in the Report Column Format when Calibrator is chosen as the Report Type. The default columns are Peak Name, Mean Area, Amount, Standard Deviation, Covariance, and Number Average. See **Report column format review and modification** on page 7-47.

Run Variables

If this check box is selected, variables shown in the sample list will be reported with the values used to satisfy those variables.

Calibration

You can choose to include the calibration plot and/or plot table. To make your selections:

1 On the Method Builder Analysis Report tab, click **CALIBRATION CONTENTS...** .

2 When the Calibration Contents dialog appears, use the check boxes to turn off or on the plot and the plot table.

Auto Action

Auto Print

Select this check box to automatically print an Analysis Report after each sample completes. If a Method uses multiple data channels with multiple analyses, Auto Print is only available for the Default Analysis for each data channel.

Auto Export

Select this check box to automatically export an Analysis Report at the end of the run. TRILUTION LC automatically names the exported file. The files is named RUN NAME_METHOD NAME_DATA CHANNEL NAME_ANALYSIS NAME. The file type (and therefore file extension) is dependent on the Format specified.

Format

Select a format from the drop-down list for the auto-exported file.

Data Channel Settings

In the Data Channel Settings dialog, you indicate how the trace is shown on the chromatogram plot in reports and you specify the thickness and color for the line representing that trace.

To specify data channel parameters:

1 On the Analysis Report tab, click **DATA CHANNEL SETTINGS**.

2 Review the information in the areas of the dialog box, described following. Modify the information, if necessary.

Following are descriptions of the areas in the Data Channel Settings dialog.

% Offset

Use this parameter to move the any secondary channel's trace away from the horizontal axis (and from other channel traces) on chromatogram plot. Express the offset as a percent of 100 mV.

Thickness

This area identifies the width of the line in pixels.

Color

This area identifies the color of the line.

Company Logo & Address

TRILUTION LC allows you to add a logo and address to the upper-left corner of the Analysis Report, Method Report, Summary Reports, and Calibration Report.

Add a logo and address

To add a logo and address to the report:

1 Click **BROWSE...** to browse for a logo in one of the following file formats: .JPG, .GIF, .PNG, or .BMP.

2 Type a name and up to three lines in the address to appear below the logo.

3 When finished, click **OK.**

Delete a logo

To delete a logo:

1 Click **CLEAR** to delete the logo.

2 When finished, click **OK.**

List View

The list view lists the integration tasks currently set for the analysis. The Tasks are based on the data collection start time indicated in the control executed at the same time as the analysis during a run.

Retention Time Windows

Reference and non-reference peaks in unknown samples are located by matching actual retention times to retention times listed in the analysis peak table. To compensate for possible retention time drift, the software defines a time window around each expected peak. It finds an expected peak if that peak lies within the retention time window.

You can modify the Absolute Error and/or Relative Error parameters to control the width of retention time windows.

Absolute error is a constant amount of time flanking a peak's nominal retention time. The software automatically searches for eluted peaks at every named retention time plus or minus this amount of time.

Relative error is a percentage of peak retention time. Relative error and, therefore, the width of retention time windows, increases with increasing retention time. Because late-eluting peaks are often broader than early peaks, the software adds this correction factor to improve the likelihood of locating late-eluting peaks.

You can calculate the beginning and end of any peak's time window using the following formulas:

Beginning: Ret. Time - [Abs. Error - (Ret. Time x Rel. Error)]

End: Ret. Time + (Abs. Error + Ret. Time x Rel. Error)

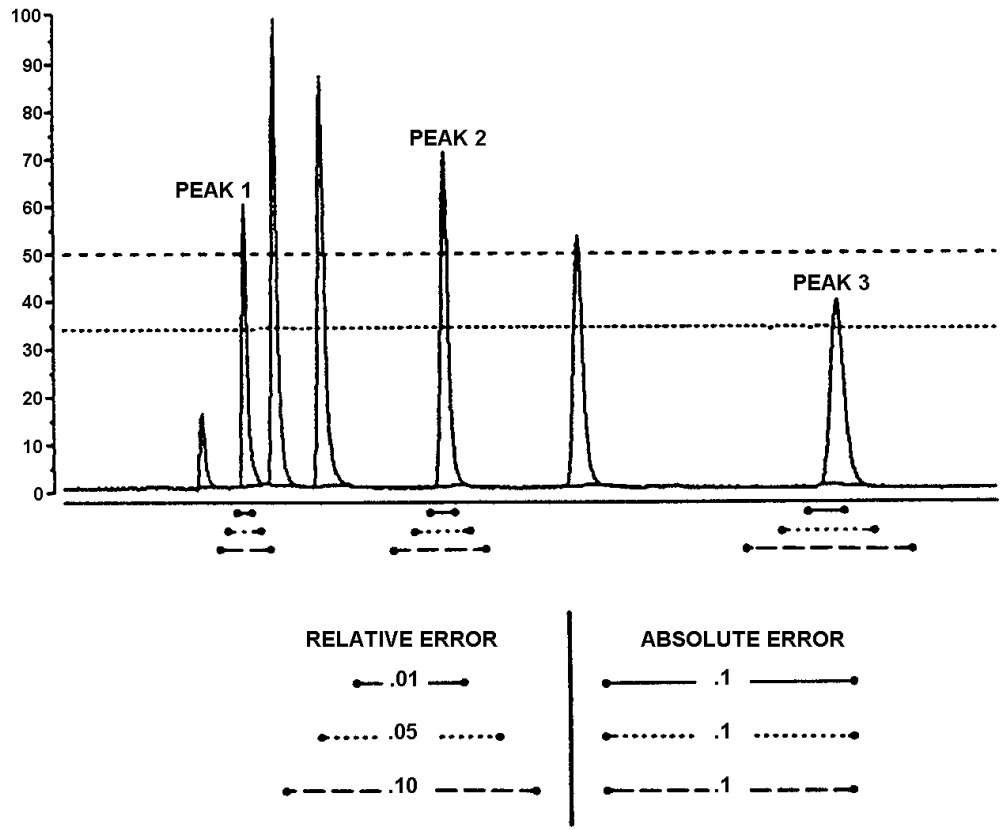
Setting Time Window Parameters

It is easy to understand how absolute error contributes to the width of retention time windows since it is simply a constant amount of time that brackets every named retention time. The contribution of relative error is harder to grasp because it varies with retention time.

The following diagram and table show what happens when absolute error is held constant at 0.1 minutes and the relative error is varied (1%, 5% or 10% of retention time). The time windows were calculated as described previously.

Notice that the retention time of Peak 3 (9.94 minutes) was very close to the upper limit (9.98 minutes) of the windows at 1% relative error. In this example, relative error should be set higher than 1% to avoid missing peaks.

	Peak 1	Peak 2	Peak 3
Nominal Ret. Time	2.27	4.77	9.78
Actual Ret. Time	2.30	4.85	9.94
Window (1% rel. error)	2.15–2.39	4.62–4.92	9.58–9.98
Window (5% rel. error)	2.06–2.48	4.43–5.11	9.19–10.37
Window (10% rel. error)	1.94–2.60	4.19–5.35	8.70–10.86



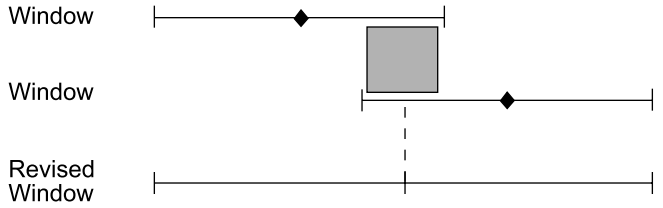
Effect of Relative Error on Width of Retention Time Windows

Resolving Overlapping Windows

Retention time windows must be wide enough to permit detection of every peak yet narrow enough to minimize windows overlapping. Overlapping can occur if windows are too wide or if peaks are too close together. Since the software cannot know whether a peak belongs to the earlier or later window in an overlapping pair, it uses the following algorithm during data analysis to revise the limits of both windows and to establish a new boundary between them. The following examples are presented in the order of least to most amount of overlap.

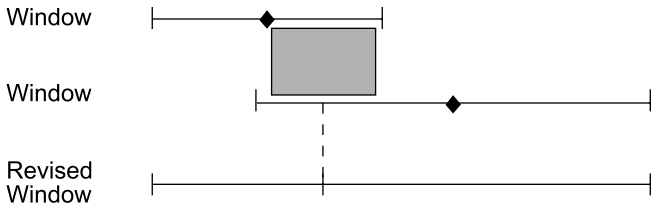
Type 1

When the beginning of Window 2 occurs after the midpoint of Window 1, a new boundary is established at the midpoint of the overlapping region.



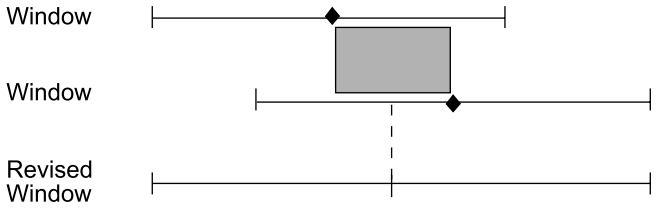
Type 2

When the beginning of Window 2 occurs before the midpoint of Window 1, a new boundary is established midway between the midpoint and end of Window 1.



Type 3

When the midpoint of Window 2 occurs at any time during Window 1, a new boundary is established midway between the center of Window 1 and the center of Window 2.



Using the Peak Table During Data Analysis

When TRILUTION LC begins to analyze data collected during a run, it looks for the reference peaks and non-reference peaks that you identified in the peak table. It knows where to look because you set the peak retention times and retention time window parameters.

After finding the peaks, TRILUTION LC checks the retention times of those peaks and updates its peak table so it knows when to expect those peaks in the next sample.

Reasons for Missing Peaks

The software might fail to identify reference or non-reference peaks if:

- the peak slope, peak sensitivity, and peak width were incompatible with chromatogram peaks
- the wrong sample was injected
- changing chromatographic conditions (flow rate, mobile phase composition, pressure, temperature) or leaks in the system resulted in inconsistent retention times
- an insufficient number or a poor choice of reference peaks were named
- the absolute error and/or relative error need to be adjusted

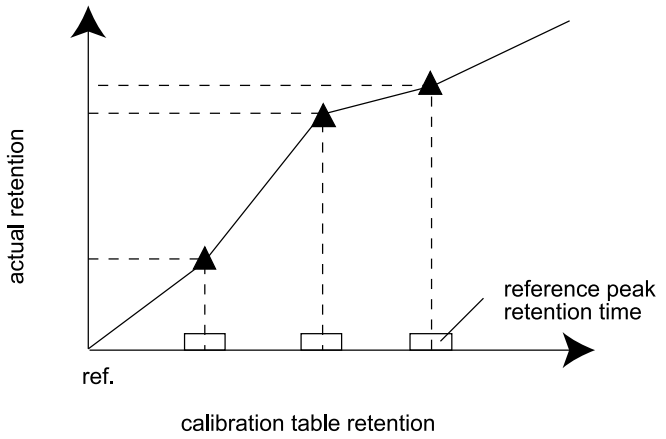
Locating Reference Peaks

When you create a peak table, you can specify retention times for one or more reference peaks. The software looks for peaks named in the peak table whose actual retention times fall within the reference peaks' time windows.

Use reference peaks cautiously. An ideal reference peak is a large, well-separated, isolated peak with a consistent retention time.

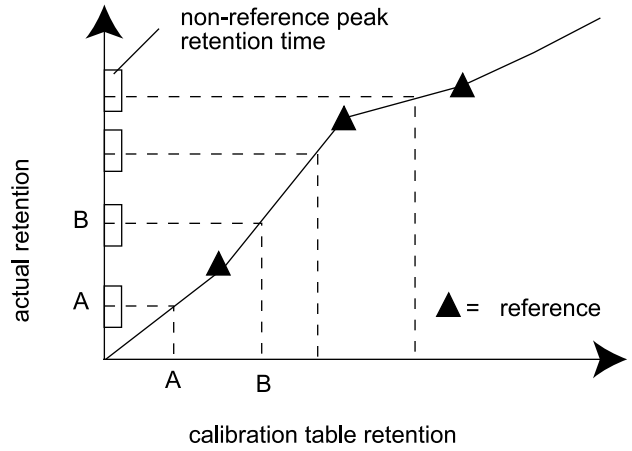
If, during data analysis, it finds a peak in a retention time window, it presumes it found the desired reference peak. As the software identifies reference peaks, it constructs an internal graph of actual retention times versus expected retention times.

If two or more peaks fall within the same reference peak time window, it chooses the largest one as the reference peak. If two peaks in a window are equally tall, the earliest peak is chosen as the reference peak.



Locating Non-Reference Peaks

Using the internal graph, described previously, the software updates the expected retention times (and retention time windows) for all non-reference peaks named in the Peak Table. It then looks for non-reference peaks named on the peak table whose actual retention times fall within a corrected retention time window.



If the software finds such a peak, it presumes it is the desired non-reference peak. If two or more non-reference peaks fall within the same window, it chooses the earliest peak whose retention time is closest to the window's center.

Updating Peak Retention Times

Over the course of multi-sample runs, retention times could drift so much that peaks would elute outside their original time windows. To ensure that the software always knows the most likely retention time of each named peak, the software continuously updates the retention time windows of reference and non-reference peaks on its internal peak table. You can turn off peak retention time tracking (see **Track Retention Times** on page 7-34).

In the first sample, the software expects that named peaks have the retention time specified in the peak table. In each subsequent sample, it adjusts the expected retention time according to information it gathers during the run.

The new midpoint of each peak's retention time window is calculated as a weighted sum of each peak's previously determined window midpoint (75%) plus its retention time in the current sample (25%). A weighted sum is necessary to minimize the influence of a single bad sample in a multi-sample run.

For example, after several samples, the midpoint of a peak's retention time window is at 3 minutes. In the next sample, that peak's retention time was 3.2 minutes. On the software's peak table, the midpoint of the retention time window is adjusted to 3.05 minutes.

(3 minutes x 0.75) + (3.2 minutes x 0.25) = 3.05 minutes

This updating only occurs if all reference peaks are found in the current sample. If all reference peaks are found, the retention time window of each reference and non-reference peak found during that sample is updated as described previously.

Error Handling Tab

Error Handling tells TRILUTION LC what types of checks to do on the calculated peak amounts and how the software responds if it detects an error.

TRILUTION LC can perform validation and system performance checks on peaks in samples.

The Error Handling tab lists the error conditions that TRILUTION LC should be aware of when analyzing data using the method.

Set Up Analysis Error Handling

Selecting a peak name and indicating error conditions for it activates error handling. What happens during a run or re-analysis processing then depends on whether an error method is chosen and whether the Resume Run check box is selected.

- If neither a method nor the Resume Run check box is selected, the run or re-analysis processing is stopped when the error condition is met.
- If both a method and the Resume Run check box are selected, TRILUTION LC executes the error handling method and then proceeds to the next step in the Sample List.

- If a method is indicated but the Resume Run check box is not selected, TRILUTION LC does one of the following:

  *during a run, it executes the error handling method and then stops the run.

  *during re-analysis processing, it stops processing.

- If a method is not indicated, but the Resume Run check box is selected, TRILUTION LC finishes the current step and proceeds to the next step in the Sample List.

Indicating error conditions

To specify error conditions:

1 ***Peak Name.*** Choose the name of the peak to monitor. The list box shows the peaks set in the peak table.

2 ***Error Method***. Choose the method to execute when the selected error condition is met.

3 ***Resume Run***. Select this check box if the run or re-analysis processing should continue even if an error has been encountered. Refer to **Set Up Analysis Error Handling** on page 7-77 to see how this check box affects what happens during the run or re-analysis.

4 ***Parameter***. In the list box, choose the peak calculation or value to monitor.

  From the drop-down list, choose one of the mathematical operators: greater than, less than, outside range, less than or equal to, equal to or greater than, or equal to.

  In the text box, type the monitor value.

5 Click **NEW**.

6 Repeat for the next peak or parameter.

Modifying error conditions

To modify an error condition set for a peak:

1 Select the row with the peak name in the table.

2 Make desired changes.

3 Click **MODIFY**.

Deleting error conditions

To delete an error condition set for a peak:

1 Select the row with the peak name in the table.

2 Right-click and select **DELETE**.

Variables

To make your Method more flexible, you can indicate a variable name instead of entering a value for a property in a Task. A variable name begins with # and can be any combination of letters and numbers and can contain some special characters. Valid variable names would be #Slope and #Sensitivity.

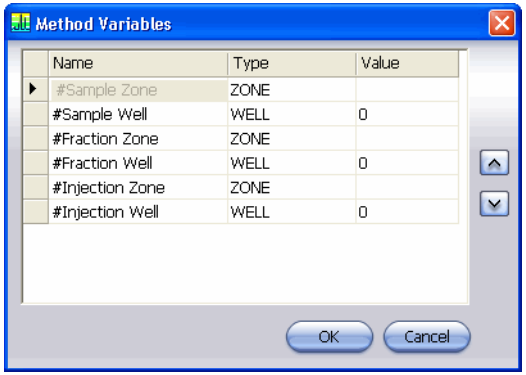
When setting a Sample List for a run, assign values to any undefined variables used by the Method. If the run is started and a value has not been assigned to a variable, the following message will be displayed:

TRILUTION
Invalid entry for #Sample Zone variable (row : 1, Method : Example). Application is paused. Correct the entry and mark to run the step.
OK

To see what variable names have been set for the Method and to indicate a default for each variable, do the following.

1 In the Method Control window, click the Method Variables tool ( ).

2 When the dialog box appears, select the variable by clicking in the column to the left of the variable name.



3 Right-click and select **MODIFY**.

4 To set a default value for the variable name, type a value in the Value box.

5 To remove an unused variable name, select the variable then right-click and select **DELETE**.

6 Click **OK** when finished.

Deleting an Analysis

On the Configured Instrument palette, select an Analysis and then right-click to view the submenu. On the submenu, click **DELETE ANALYSIS**.

Running an Application 8

In the Application Run window, you specify the list of steps, called a Sample List, to execute during a run. A step in the Sample List identifies a sample to inject and the Method that includes the control and analysis conditions to process that sample. Or, a step may identify a Method to use for system startup or shutdown. This section describes the components of the Application Run window and how to generate the Sample List.

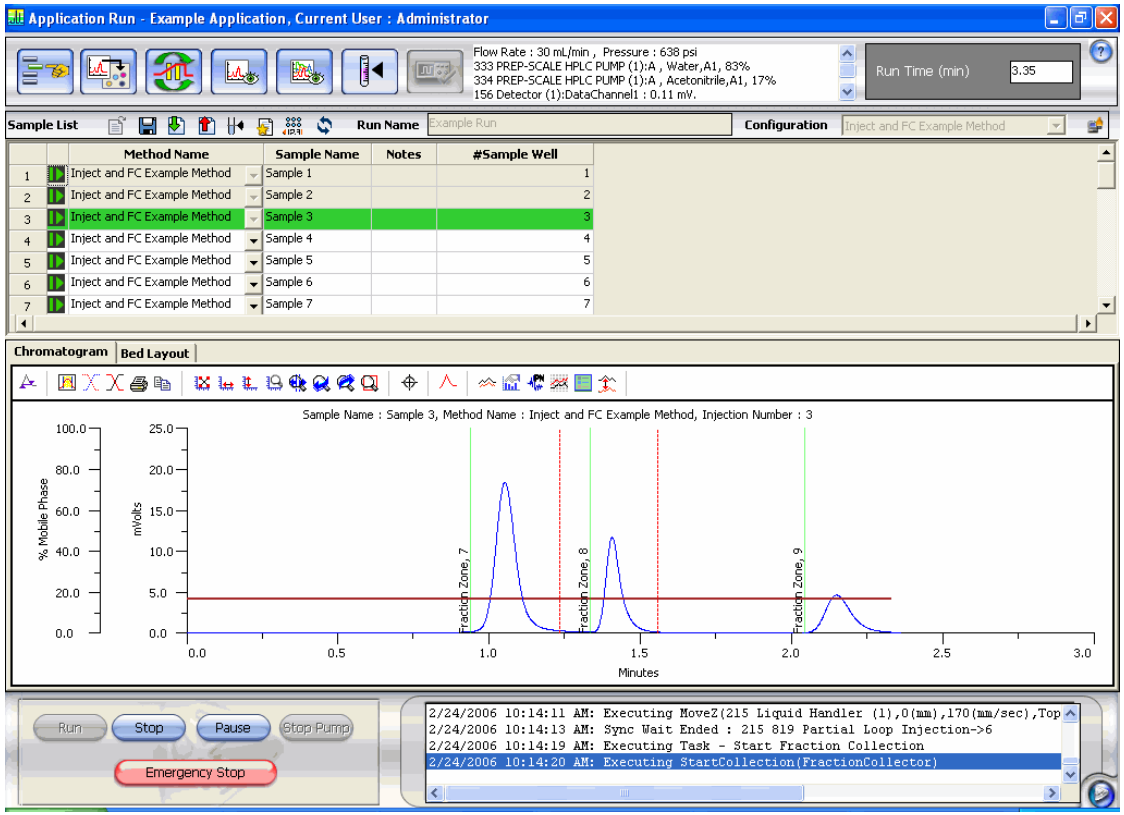
The Application Run window is also where you start and monitor the progress of a run. In addition, it is where you perform manual control as described in ***Chapter 10, Manual HPLC System Control***.

Application Run Window

You access the Application Run window by:

- right-clicking an Application in the Project Library and then choosing **RUN** or
- selecting an Application in the Project Library and then clicking **RUN** or
- clicking **RUN** in the Method Builder.

Following is an Application Run window.


Application Run - Example Application, Current User : Administrator
Flow Rate : 30 mL/min , Pressure : 638 psi
333 PREP-SCALE HPLC PUMP (1):A , Water,A1, 83%
334 PREP-SCALE HPLC PUMP (1):A , Acetonitrile,A1, 17%
156 Detector (1):DataChannel1 : 0.11 mV.
Run Time (min)
3.35
Sample List
Run Name
Example Run
Configuration
Inject and FC Example Method
Method Name
Sample Name
Notes
#Sample Well
Chromatogram
Bed Layout
Sample Name : Sample 3, Method Name : Inject and FC Example Method, Injection Number : 3
% Mobile Phase
mVolts
Minutes
Fraction Zone, 7
Fraction Zone, 8
Fraction Zone, 9
Run
Stop
Pause
Stop Pump
Emergency Stop
2/24/2006 10:14:11 AM: Executing MoveZ(215 Liquid Handler (1),0(mm),170(mm/sec),Top
2/24/2006 10:14:13 AM: Sync Wait Ended : 215 819 Partial Loop Injection->6
2/24/2006 10:14:19 AM: Executing Task - Start Fraction Collection
2/24/2006 10:14:20 AM: Executing StartCollection(FractionCollector)

Title Bar

The title bar displays the name of the running Application and the current logged on user name.

Application Run Toolbar

Choose available functions using the icons at the top of the Application Run window.

Icon	*Label*	*Description*
	Manual Control	Control HPLC system manually.
	Manual Advance	Manually advances the fraction collector dispense head to the next well.
	Gradient Hold	Allows you to temporarily change the flow rate and ramp the mobile phase composition.
	Show Graph in Cascade Mode	Creates a separate window for each data channel and cascades the windows.
	Show Graph in Tiled Mode	Creates a separate window for each data channel and cascades the windows.
	Solvent Settings	Allows you to indicate the volume of reservoir solvent. When the volume reaches 0, a notification is sent, if indicated in the Notification utility.

Icon	*Label*	*Description*
	Turn Online Analysis ON	This is the default condition and must be changed prior to running, if desired. Applies analysis conditions to the Chromatogram while running. **Note:** It is recommended to keep Online Analysis OFF when collecting fractions.
	Turn Online Analysis OFF	This is the default condition and must be changed prior to running, if desired. Displays raw data in the chromatogram (no analysis conditions applied).

Sample List Toolbar

The Sample List lists the steps to execute during a run. Choose available functions using the icons in the Sample List workspace.

Icon	*Description*
	Opens the last-saved Sample List created for the Application.
	Saves the current Sample List (including shown columns and widths) to the Application.
	Allows you to import Sample List (.TSL) files.
	Prompts to save the current Sample List then allows to export it to a selected location as a .TSL file.

Icon	*Description*
	Allows you to set initial volumes for any or all wells in each Bed Layout in the Application.
	Allows you to set the criteria for fraction re-injection and to select the Method to run when re-injecting fractions. If after you set the criteria, you choose to not re-inject fractions, you must clear the Auto Re-injection check box in the Fraction Re-injection Criteria dialog.
	Allows you to set the minimum number of fraction sites required for each injection.
	Refreshes the Sample List after variables are deleted.

Run Name

Type a name for the run (50 characters maximum) that will be used to identify the run in the Application Run Result window and in reports.

Configuration Toolbar

The Configuration selected will display in the Status box.

Icon	*Description*
	After selecting a Method from the drop-down list of all Methods in the Application, click to set the Method's Configuration that will be monitored in the Status box prior to beginning the run.

Graph Toolbar

The graph displays the real-time run data. Choose available functions using the icons in the graph toolbar. All settings are temporary and revert to the Graph Settings and Data Channel Settings on the Method Builder-Analysis-Report Tab at the start of each sample.

Icon	*Description*
	Toggles between hiding and showing the baseline.
	Toggles between hiding and showing fraction collection start and stop lines.
	Toggles between hiding and showing actual percent mobile phase
	Toggles between hiding and showing expected percent mobile phase

Icon	*Description*
	Displays the print dialog for printing the chromatogram as it is currently viewed on-screen.
	Copies the chromatogram, as it is currently viewed on-screen, to the clipboard.
	Scales both axes to minimum and maximum values for the displayed trace(s).
	Scales the X-axis to minimum and maximum values for the displayed trace(s).
	Scales Y-axis to minimum and maximum values for the displayed trace(s).
	Returns view to the last zoom.
	Zooms in on a point and centers it in the chromatogram as it is viewed on-screen.
	Returns view to last zoom (multiple undo zoom).
	Returns view to next zoom (multiple redo zoom).
	Enlarges lassoed portion of the graph.
	Displays the minutes and mVolts at the intersect of the crosshair.

Icon	*Description*
	Displays the Peak Analysis Result window.
	Changes the color of the trace(s) and mobile phase and allows you to choose to show or hide each.
	Sets the lower limit, upper limit, increment value, and color for each axis.
	Changes the orientation and color of the peak name label(s) and allows you to choose to show or hide the label.
	Toggles showing or hiding the grid and allows you to change the color of the major (aligned with numbered tick marks) and/or minor (positioned between the numbered tick marks) grid lines.
	Toggles showing or hiding the legend.
	Moves one or more of the trace(s). This option can be used to offset a chromatogram that is overlapping another. It can also be helpful when subtracting or dividing chromatograms since you can adjust for varying retention times by aligning peaks in the chromatogram.

Right-click menu

Select the Move Channel tool ( ) and then right-click on a trace to display the following menu options.

Menu	*Description*
SET OFFSET	Displays the Channel Offset Settings dialog which allows you to change the color of the displayed trace and offset the race in either the X (Minutes) or Y (mVolts) direction.
SET MVOLTS OFFSETS	After moving the trace, this option provides an additional menu to zero the trace (**ZERO**), return the trace to the previous setting (**LAST SETTING)**, or revert to the original setting (**ORIGINAL SETTING)** in the Y-direction.
SET ALL MVOLTS OFFSETS	After moving multiple traces, this option provides an additional menu to zero the traces (**ZERO**), return the traces to the previous setting (**LAST SETTING)**, or revert to the original settings (**ORIGINAL SETTING)** in the Y-direction.
SET MINUTES OFFSETS	After moving the trace, this option provides an additional menu to zero the trace (**ZERO**), return the trace to the previous setting (**LAST SETTING)**, or revert to the original setting (**ORIGINAL SETTING)** in the X-direction.

Menu	*Description*
SET ALL MINUTES OFFSETS	After moving multiple traces, this option provides an additional menu to zero the traces (**ZERO**), return the traces to the previous setting (**LAST SETTING**), or revert to the original settings (**ORIGINAL SETTING**) in the X-direction.
MOVE IN MINUTES ONLY	Allows you to move the trace only horizontally.
MOVE IN MVOLTS ONLY	Allows you to move the trace only vertically.

Action Buttons

The following action buttons are located in the lower left corner of the Application Run window.

Action Button	*Description*
RUN	This option begins the Application Run.
STOP	This option stops the run. You will be asked if you want to save data for the current sample. The mobile phase composition and flow conditions in effect at the time of termination remain in effect.

Action Button	*Description*
PAUSE/CONTINUE	This option causes the run time and gradient progression to enter a timed hold. Mobile phase continues to flow at the current composition and flow rate. If you pause a run, data collection and fraction collection are not interrupted. It proceeds until the data collection time for the current Method elapses. To continue the gradient progression, click **CONTINUE**. The run time and the gradient profile continue as programmed.
STOP PUMP	This option stops flow from the pumps. It is only available until the run starts.
EMERGENCY STOP	This option stops the run and stops the flow from the pumps.

Chromatogram

Shows the run-time chromatographic plot of acquired data, gradient profile, and run-time events.

The trace begins at the data collection begin time (usually synchronized with injection).

For the gradient profile, the mobile phase composition (Y-axis—labeled % Mobile Phase) is plotted with respect to time (X-axis).

Status Box

Displays status information for the components of the HPLC system. Pressure information and contact status is displayed here.

Run Time

Displays the time that has passed since the start of the current running Method.

Info Window

Lists run-time events and the time they occurred.

Setting Up a Sample List

The Sample List is an editable grid that specifies how many samples will be run, information about those samples, and qualifies any variables in the associated Methods.

Before you set up a Sample List, create the Methods and, optionally, analyses to use during the run.

To increment the contents in a column, click in the first cell and drag down through the cells to increment. The cursor displays as a plus sign (+) briefly when the value can be incremented.

To copy the contents of one cell to others in the same column, click in the cell with contents to be copied and then hold CTRL and drag down through the cells to which the contents should be copied. The cursor displays as a plus sign (+) briefly when the value can be copied.

To copy the contents of one row to another, select the row to be copied and then when the cursor changes (), drag and drop the row at the destination.

Not all columns and rows allow copying and incrementing. Refer to the following table.

Column	*Copy Contents of One Cell?*	*Increment Contents in Column?*	*Copy Contents of Row?*
Method Name	NO	NO	**YES**
Sample Name	**YES**	COPIES	**YES**
Sample Description	**YES**	COPIES	**YES**
Amount	**YES**	**YES**	**YES**
Sample Type	**YES** EXCEPT ACTUAL AND NOMINAL AMOUNTS	COPIES EXCEPT ACTUAL AND NOMINAL AMOUNTS	**YES** EXCEPT ACTUAL AND NOMINAL AMOUNTS
Sample Re-injection	NO	NO	NO
Notes	**YES**	COPIES	**YES**

Default Columns

When a new Sample List is created, columns for Method Name, Sample Name, and Notes appear by default.

Columns can be shown or hidden. Right-click on a column name and then select the column name from the menu. Doing so toggles the column to hide. Repeat to toggle the column to show.

Columns can be re-sized by dragging the column border in the column header.

Saved Sample Lists include shown columns and selected widths.

Descriptions of all columns follow.

Method Name

This column is required. Select a Method from the drop-down list of Methods in the Application. This is the Method that will be used when the selected sample is run and to analyze the collected data for that sample.

Sample Name

This column is optional. Click in the cell and type a name that describes the Sample (default is “Sample”). This name appears in the run-time chromatogram and the Samples drop-down list in the Run Result window, and optionally, in reports.

Amount

Not used.

Sample Description

This column is optional. Click in the cell and type a name that describes the Sample (default is “Sample”).

Sample Type

This column is required. There are four choices (BLANK, CONTROL, UNKNOWN, and STANDARD) in the drop-down list that are described below. The default is UNKNOWN.

BLANK

A blank sample is generally the mobile phase solvent. A run with a blank solvent enables TRILUTION LC to subtract the solvent noise from an actual run.

CONTROL

A control sample is a reference sample containing the target analyte of a known amount.

When the sample is identified as a control, the Standard Information dialog displays. Enter a value for the Actual Amount and optionally, for the Nominal Amount.

Actual Amount

Actual Amount is the amount you actually measured to prepare a particular unknown sample.

Nominal Amount

Nominal Amount is the amount you wanted to measure.

UNKNOWN

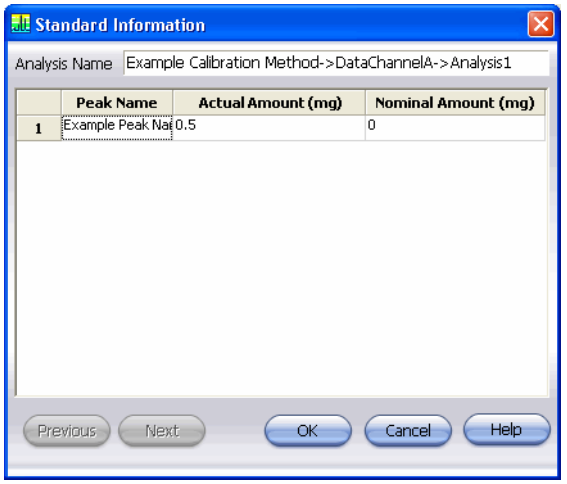
The unknown sample is the interest of analysis. The amounts with area/height are reported according to the standard sample used for calibration.

STANDARD

The standard sample is a sample with known amounts. A standard sample run for multiple times provides calibration points. The amounts in unknown sample are reported in TRILUTION LC in proportion to the calibration points.

When the sample is identified as a standard, the Standard Information dialog displays. Enter a value for the Actual Amount and optionally, for the Nominal Amount.

A peak specified as an internal standard is identified by a change in color for the row label.



Actual Amount

Actual Amount is the amount you actually measured to prepare a particular unknown sample.

Nominal Amount

Nominal Amount is the amount you wanted to measure.

Sample Re-injection

This column is optional and is used if you want to re-inject a sample based on either a named peak or an unknown peak meeting specified peak criteria.

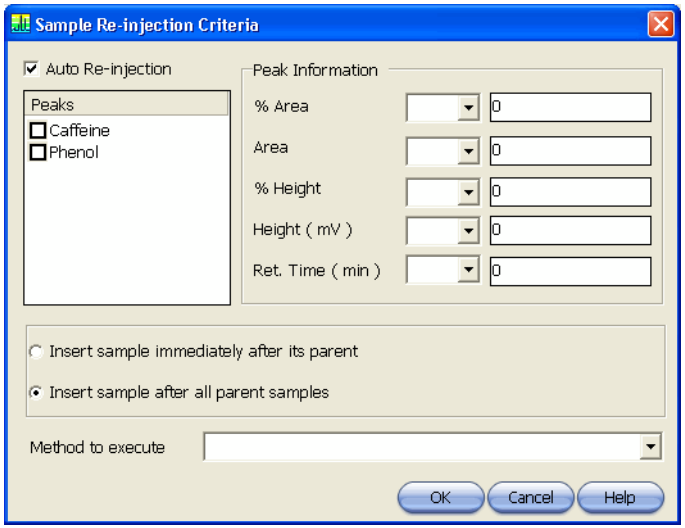
Note: If you set both fraction and peak re-injection criteria and both are met, only fractions will be re-injected.

To set peak criteria for re-injecting a sample:

1 Click in the cell to open the Sample Re-injection Criteria dialog.

2 Ensure that the Auto Re-injection check box is selected. (It is by default.)

3 Select the check box next to the name of each peak to be considered. If no peaks are selected, all peaks will be considered.



4 Specify the criteria for the peaks. Criterion are considered independently. If any of the peaks meet any of the criteria, the sample will be re-injected.

   a) Select an operator (null, greater than, or less than). If null is selected, the criteria will be ignored.

   b) Type a value.

5 Choose, by selecting the corresponding option button, whether to:

   - insert the sample immediately after its parent or
   - after all parent samples (at end)

   If you will be using a shutdown method, you can specify a step in the Sample List for the shutdown and then the sample will be inserted after all parent samples and before the shutdown. See **Specifying a Shutdown** on page 8-22.

6 Select the Method to execute when re-injecting the sample.

7 Repeat for each sample in the Sample List as desired.

Notes

This optional column appears after a Method is selected. Double-click in the cell and then type any text that you want to appear in the Run Report.

Additional Columns

Other columns appear depending on the variables set in your Method. For example, if an injection Task in a Method requests inputs, such as sample volume and sample location, columns labeled #Sample Volume and #Sample Location appear. If one of the inputs requests the fraction site at which to begin collection, refer to **Setting Up Sample List for Fraction Collection** on page 8-23.

Inserting Sample Between Samples

To insert a sample between two existing samples:

1 Select the row for the sample after which the new sample will be placed. For example, to place a step between steps 3 and 4, select row 3.

2 Right-click and then select **INSERT SAMPLE**.

Adding Sample

To add the first sample to a new list or add a sample to the bottom of the list:

1 Select any row.

2 Right-click and then select **ADD SAMPLE** or **ADD MULTIPLE SAMPLES**. If **ADD MULTIPLE SAMPLES** is selected, specify the number of samples to add.

3 Repeat to add more samples.

Generating Multiple Samples

To add multiple samples:

1 Select any row.
2 Right-click and then select **ADD MULTIPLE SAMPLES**.
3 Specify the number of samples to add.
4 Repeat to add more steps.

Deleting Sample

To remove a row (sample) from the Sample List:

1 Select the row for the sample to be deleted.
2 Right-click and then select **DELETE SAMPLE**.

Clearing Sample

To clear a row of all values, but keep the row in the Sample List:

1 Select the row for the sample to be cleared.
2 Right-click and then select **CLEAR SAMPLE**.

Specifying a Shutdown

To specify a shutdown:

1 Select a Method under Method Name.

2 Select the row.

3 Right-click and then select **SELECT AS SHUTDOWN**.

Using the Bed Layout to Generate the Sample List

When creating a Sample List, you can view the Bed Layout, select multiple wells, and have TRILUTION LC generate steps in the Sample List.

1 Open the Application Run window.

2 Place the cursor in the first cell for which you will be selecting a well.

3 Click to select the Bed Layout tab.

4 Select a Bed Layout and a Zone from the drop-down lists. Available wells appear dark blue.

5 Choose multiple well locations as described below.

To select random wells within one zone:

a) Press the **CTRL** key and select each well.

b) Click **ADD WELL**.

To select a range of wells within one zone:

a) Lasso the range of wells.

b) Click **ADD WELL**.

6 Review the Sample List and, if necessary, enter or change the sample description for each sample.

Setting Up Sample List for Fraction Collection

If you are doing fraction collection, TRILUTION LC can keep track of the wells used for each injection (referred to as continuous collection). Or, you can indicate the well at which to start collection for each injection (referred to as specific site collection).

With continuous collection, you indicate the zone in which collection occurs (Fraction Zone) and then specify 0 for the Fraction Well. For the first injection, collection starts in the first well of the zone. For the second and each subsequent sample collected into the zone, collection will begin in the next available numbered well.

With specific site collection, you indicate both the zone and well at which collection starts for each sample.

You may use both continuous collection and specific site collection within the same Sample List.

Refer to the example Sample Lists that follow.

Example 1: Specific Site collection: collection of each sample's eluent into same set of tubes (one zone)

If the fractions for each injection are collected into the same set of tubes, ensure that the zone and well specified for the #Fraction Zone and #Fraction Well variables are the same for each sample, for example, specify Fraction Zone for the #Fraction Zone variable for each sample and specify 1 for the #Fraction Well variable for each sample.

	Method Name	Sample Name	Amount	Sample Description	Sample Type	#Fraction Well	#Fraction Zone	Notes
1	Control	Sample	0.00		UNKNOWN	1	Fraction Zone	
2	Control	Sample	0.00		UNKNOWN	1	Fraction Zone	
3	Control	Sample	0.00		UNKNOWN	1	Fraction Zone	
4	Control	Sample	0.00		UNKNOWN	1	Fraction Zone	
5	Control	Sample	0.00		UNKNOWN	1	Fraction Zone	

Example 2: Continuous collection: collection of each sample's eluent into its own set of tubes (one zone)

If the fractions for each injection are collected into a different set of tubes, indicate the same zone name for each sample and then specify 0 for the #Fraction Well variable for each sample.

	Method Name	Sample Name	Amount	Sample Description	Sample Type	#Fraction Well	#Fraction Zone	Notes
1	Control	Sample	0.00		UNKNOWN	0	Fraction Zone	
2	Control	Sample	0.00		UNKNOWN	0	Fraction Zone	
3	Control	Sample	0.00		UNKNOWN	0	Fraction Zone	
4	Control	Sample	0.00		UNKNOWN	0	Fraction Zone	
5	Control	Sample	0.00		UNKNOWN	0	Fraction Zone	

Example 3: Continuous collection : collection of each sample's eluent into its own set of tubes (multiple zones)

If the fractions for each injection are collected into a different set of tubes, indicate the zone name for each sample and then specify 0 for the #Fraction Well variable for each sample. The following example uses two zones. Fractions from standard injections (Standard Sample) are collected into one zone (Standard Fractions), and fractions from unknown injections (Unknown Sample) are collected into another zone (Unknown Fractions).

	Method Name	Sample Name	Amount	Sample Description	Sample Type	#Fraction Well	#Fraction Zone	#Sample Zone	Notes
1	Control	Sample	0.00		UNKNOWN	0	Standard Fractions	Standard Sample	
2	Control	Sample	0.00		UNKNOWN	0	Standard Fractions	Standard Sample	
3	Control	Sample	0.00		UNKNOWN	0	Standard Fractions	Standard Sample	
4	Control	Sample	0.00		UNKNOWN	0	Unknown Sample	Unknown Fractions	
5	Control	Sample	0.00		UNKNOWN	0	Unknown Sample	Unknown Fractions	
6	Control	Sample	0.00		UNKNOWN	0	Unknown Sample	Unknown Fractions	

Re-injecting Collected Fractions

When setting up a Sample List to re-inject collected fractions, use the Fraction Re-Injection ( ) button to access the Fraction Re-injection Criteria dialog.

To set up a Sample List to re-inject collected fractions:

1 Set up the Sample List for injections.

2 Click the Fraction Re-Injection ( ) button.

3 Ensure that the Auto Re-injection check box is selected. (It is by default.)

4 On the Fraction Re-injection Criteria dialog, specify the criteria for the fractions to re-inject. Do this by specifying the minimum area of the fractions or the minimum height of the peaks. If both are specified, then both will be used.

5 Choose, by selecting the corresponding option button, whether to:

- insert the fractions immediately after each parent or
- after all parent samples (at end).

  If you will be using a shutdown method, you can specify a step in the Sample List for the shutdown and then the fractions will be inserted after all parent samples and before the shutdown. See **Specifying a Shutdown** on page 8-22.

6 Select the Method to execute when re-injecting the collected fractions.

  Note: The Sample Zone must be #Sample Zone and the Sample Well must be #Sample Well, defined in the Sample Variable dialog in this Method.

7 If you wish to inject the fractions collected when your re-injection Method was run, select the Apply Criteria to Re-Injected Fractions check box. It defaults cleared.

8 Optionally, set the minimum number of fraction sites required for each sample by doing the following:

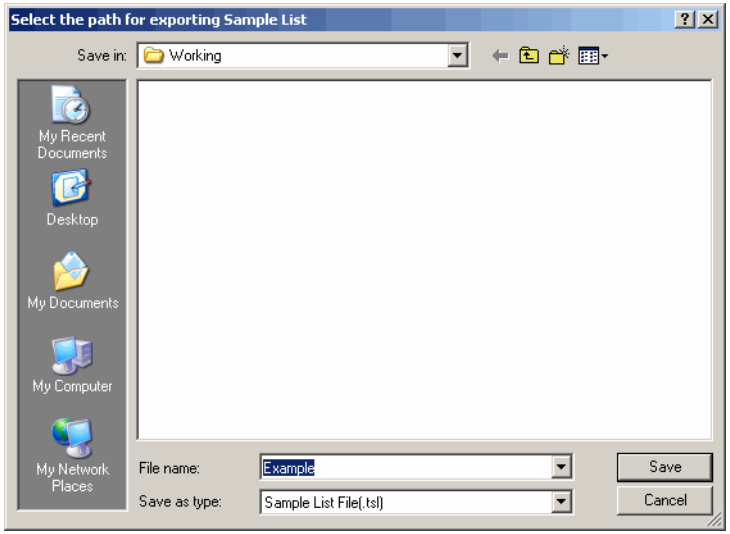
  a) Click the Fraction Counter ( ) button.

  b) Enter the number of minimum fraction sites required for each sample.

  c) Click **OK**.

Exporting a Sample List

1 On the Application Run screen, click the Sample List Export ( ) button. The Select the path for exporting Sample List window is displayed.



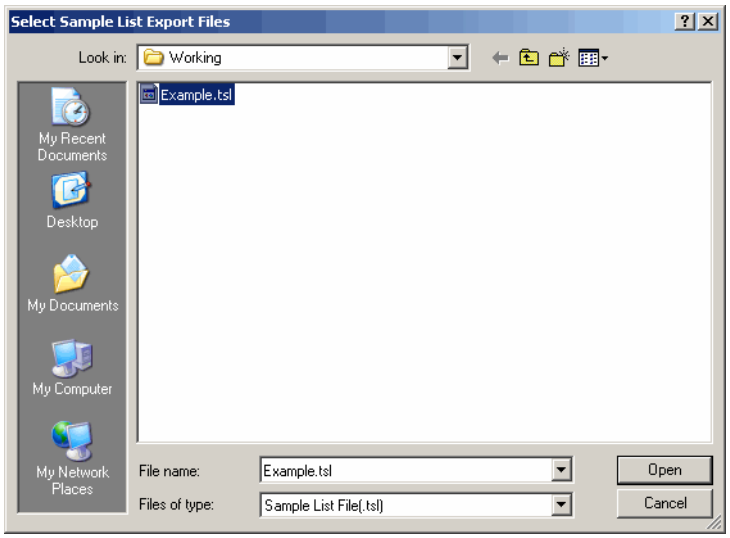
The Select the path for exporting Sample List window

2 In the Select the path for exporting Sample List window, select a folder and then click **SAVE**.

The Sample List is saved in the specified folder with a .TSL extension.

Importing a Sample List

1 On the Application Run screen, click the Sample List Import ( ) button. The Select Sample List Export Files window is displayed.



The Select Sample List Export Files window

2 On the Select Sample List Export Files window, do the following:

a) Browse for and select the Sample List file.

b) Click **OPEN**.

	Because Sample Lists include information about the Methods and the Bed Layout, Sample Lists that do not match the Application cannot be imported.

3 On the Sample List toolbar, click the Open Last-saved Sample List ( ) icon. If asked if you want to revert to the last-saved sample list, click **YES**.

Reviewing Where Run-Generated Information is Stored

During the run, TRILUTION LC can generate data, reports (which may include chromatogram plots of acquired traces), and log. See ***Chapter 12, Results*** for more information.

Starting a Run 9

The Application Run window is where you start and monitor the progress of a run.

While the run is in progress, you can:

- modify steps that have not yet been executed. This includes modifying a Method so updated analysis conditions are used.
- use the toolbar to manipulate the appearance of the run-time graph.

Starting a Run

To get ready for and begin a run:

1 Make sure all system instruments are turned on and are ready to run (pumps are primed, column is equilibrated, samples are in place, etc.).

2 Check that the correct Sample List is open.

3 Click **RUN**.

During the Run

When the run starts, you may want to focus your attention on a few elements of the Application Run window. These elements are described below.

Status Box

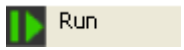
When you open the Application Run window, and throughout the run, a status box is displayed. The status box displays information for the instruments in the selected Configuration. You see pressure information and contact status in this box.

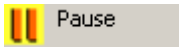
Sample List

The current running step is highlighted pink in the Sample List.

Right-click options

A description of options available when right-clicking a pending sample follows.

Option	*Description*
	Functions as a resume or continue when a sample/step has been paused.

Option	*Description*
	Allows you to skip the sample/step.
	Allows you to pause a sample until the right-click Run option is selected.

Chromatogram Pane

A run-time chromatographic plot of acquired data, gradient profile of the Method, and run-time events are displayed in the Chromatogram pane.

Interrupting a Run

You can choose to pause or terminate a run in progress.

Pause Run

To pause a run, click **PAUSE**.

This option causes the running and pending tasks and gradient progression to enter a timed hold. Mobile phase continues to flow at the current composition and flow rate. If you pause a run, data collection and fraction collection are not interrupted. It proceeds until the data collection time for the current Method elapses.

To continue the gradient progression, click **CONTINUE**. The run time and the gradient profile continue as programmed.

Stop Run

To stop the run before it completes, click **STOP.**

This option stops the run. You will be asked if you want to save data for the current sample.

The mobile phase composition and flow conditions in effect at the time of termination remain in effect. Flow does not stop automatically after a run! To stop flow, click **STOP PUMP**.

Emergency Stop

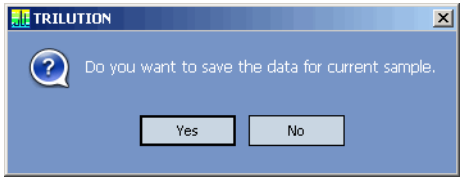
This option stops the run and stops the flow from the pumps.

Resuming a Run after Termination

You can restart a run that was stopped while in progress. You can resume the run at the same step at which it was terminated. Or, you can resume the run at an earlier step if you want to repeat a series of steps.

After the run has been stopped, do the following:

1 After a run is terminated, a dialog is displayed asking if data should be saved for the current sample. Click **YES** or **NO**. (See below.)



2 Modify the Sample List to display the samples that you want to run. You can indicate the same samples or remove ones that had completed before the run was terminated.

3 Change the Run Name and then click **RUN**. The run begins.

After the Run

Status of TRILUTION LC

A run is complete once TRILUTION LC has finished all of the samples in the Sample List (or after you have clicked **STOP** or **EMERGENCY STOP**).

The mobile phase composition and flow conditions in effect when the run is finished remain in effect. Flow does not stop automatically after a run! To stop flow, click **STOP PUMP**.

Data and report files can be viewed, and stored data can be re-analyzed, using the Results window; see ***Chapter 12, Results***.

Shutting Down the HPLC System

Shutdown methods are Methods that include conditions that you want in effect after each run. A shutdown method might reduce the flow rate to zero and extinguish the lamp on a detector. You create shutdown methods as you would any Method.

To automatically shut down your HPLC system at the end of a run, specify the Method for the last sample in the Sample List.

Specifying a Shutdown

If you will be using a shutdown method, you can specify a step in the Sample List for the shutdown and then the fractions or samples for re-injection will be inserted after all parent samples and before the shutdown (if that option is selected).

To specify a shutdown:

1 Select a Method under Method Name.

2 Select the row.

3 Right-click and then select **SELECT AS SHUTDOWN**.

Stop Flow

To stop flow, click **STOP PUMP**.

Viewing Log File

To display the log file produced during a run:

1 Access the Application Run Result dialog by right-clicking on an Application in the Project Library and then choosing **RESULT** or by double-clicking the Result icon (Result).

2 Locate the run for which you want to view the log.

3 Right-click on the Run and choose **VIEW LOG**. The file appears in a text editor box. You can add your own comments, change the font, and print the log file.

Manual HPLC System Control 10

In addition to timed runs, TRILUTION LC also provides manual control over HPLC system components. Manual control is useful for getting the system up and running, for method development, and for checking HPLC system operation before a run.

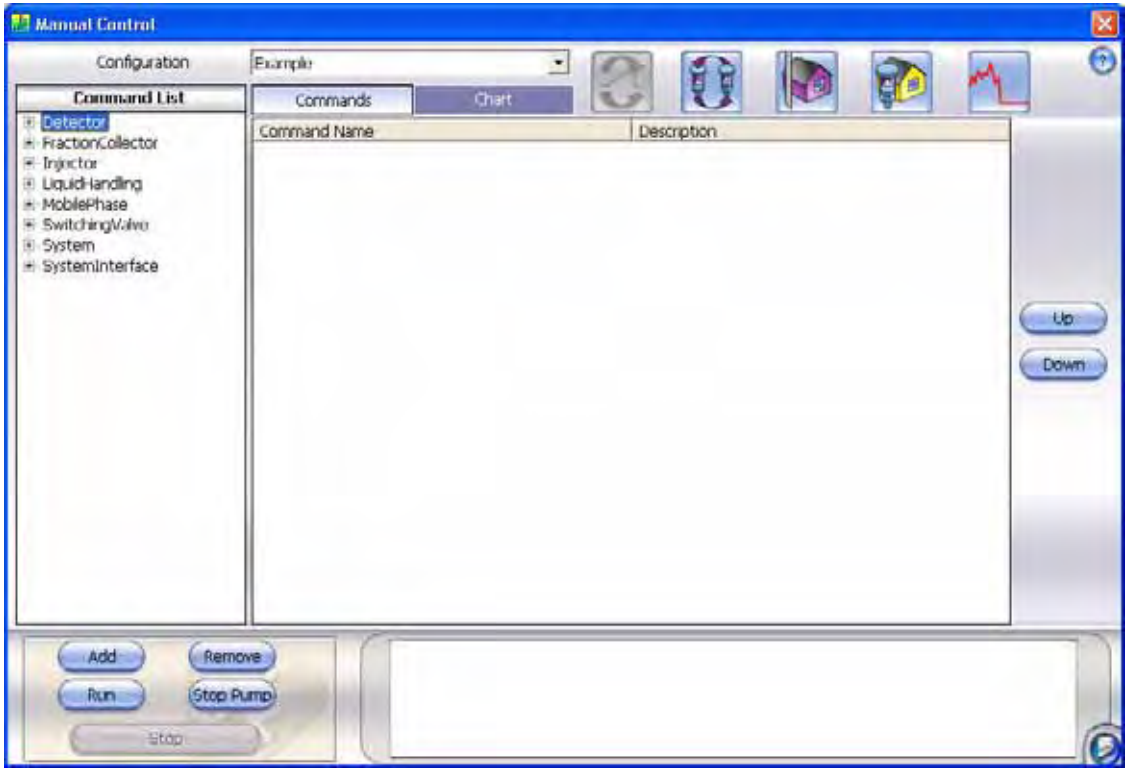
Note: Before running your system in manual mode, be sure that the instruments in the HPLC system are turned on and the appropriate connections are made as described in each instrument's user's guide.

Manual control ( ) is accessed from the Application Run window.

Manual Control Window

You access the Manual Control window by clicking the Manual Control icon ( ) in the Application Run window.

Following is a Manual Control window.



The Manual Control Window

Manual Control Toolbar

Choose available functions using the icons at the top of the Manual Control window.

Icon	*Label*	*Description*
	Manual Run Gradient	Instructs Gilson pumps to achieve a desired mobile phase composition and flow rate. Not available while an Application is running.
	Prime	Primes the dilutor in the specified zone or the transfer tubing at the rinse station. It aspirates the specified amount of volume from the reservoir (or the syringe capacity), and then dispenses to the specified wells. If the volume specified exceeds the syringe capacity, then multiple aspirates and dispenses will be performed to deliver the requested volume.
	Home Probes	Homes the X/Y/Z on the specified liquid handler.
	Home Pump	Homes the pump or the internal dilutor or external dilutor at a specified well.
	Auto Zero Channels	Sets the channel's trace to 0 mV.

Executing Manual Control Toolbar Functions

The Manual Control toolbar provides pre-defined command run lists on click of an icon.

To execute a pre-defined command run list:

1 Click the icon.

2 Set the properties for the command or select the instrument for which to run the pre-defined command run list, when prompted.

3 Click **OK** and the list runs.

Configuration

The configuration selected on the Application Run screen that will be used in Manual Control is displayed.

Strip Chart Toolbar

Choose available functions using the icons in the graph toolbar.

Icon	*Description*
	Displays the print dialog for printing the chromatogram as it is currently viewed on-screen.
	Copies the chromatogram, as it is currently viewed on-screen, to the clipboard.
	Scales both axes to minimum and maximum values for the displayed trace(s).

Icon	*Description*
	Scales the X-axis to minimum and maximum values for the displayed trace(s).
	Scales Y-axis to minimum and maximum values for the displayed trace(s).
	Returns view to the last zoom.
	Zooms in on a point and centers it in the chromatogram as it is viewed on-screen.
	Returns view to last zoom (multiple undo zoom).
	Returns view to next zoom (multiple redo zoom).
	Enlarges lassoed portion of the graph.
	Displays the minutes and mVolts at the intersect of the crosshair.
	Changes the color of the trace(s) and mobile phase and allows you to choose to show or hide each.
	Sets the lower limit, upper limit, increment value, and color for each axis.
	Changes the orientation and color of the peak name label(s) and allows you to choose to show or hide the label.
	Toggles showing or hiding the grid and allows you to change the color of the major (aligned with numbered tick marks) and/or minor (positioned between the numbered tick marks) grid lines.

Icon	*Description*
	Toggles showing or hiding the legend.
	Moves one or more of the trace(s). This option can be used to offset a chromatogram that is overlapping another. It can also be helpful when subtracting or dividing chromatograms since you can adjust for varying retention times by aligning peaks in the chromatogram.

Right-click menu

Select the Move Channel tool ( ) and then right-click on a trace to display the following menu options.

Menu	*Description*
SET OFFSET	Displays the Channel Offset Settings dialog which allows you to change the color of the displayed trace and offset the race in either the X (Minutes) or Y (mVolts) direction.
SET MVOLTS OFFSETS	After moving the trace, this option provides an additional menu to zero the trace (**ZERO**), return the trace to the previous setting (**LAST SETTING**), or revert to the original setting (**ORIGINAL SETTING**) in the Y-direction.

Menu	*Description*
SET ALL MVOLTS OFFSETS	After moving multiple traces, this option provides an additional menu to zero the traces (**ZERO**), return the traces to the previous setting (**LAST SETTING**), or revert to the original settings (**ORIGINAL SETTING**) in the Y-direction.
SET MINUTES OFFSETS	After moving the trace, this option provides an additional menu to zero the trace (**ZERO**), return the trace to the previous setting (**LAST SETTING**), or revert to the original setting (**ORIGINAL SETTING**) in the X-direction.
SET ALL MINUTES OFFSETS	After moving multiple traces, this option provides an additional menu to zero the traces (**ZERO**), return the traces to the previous setting (**LAST SETTING**), or revert to the original settings (**ORIGINAL SETTING**) in the X-direction.
MOVE IN MINUTES ONLY	Allows you to move the trace only horizontally.
MOVE IN MVOLTS ONLY	Allows you to move the trace only vertically.

Action Buttons

The following action buttons are located in the lower left corner of the Manual Control window.

Action Button	*Description*
ADD	Places the selected command in the run list.
REMOVE	Deletes the selected command from the run list.
RUN	Executes the commands in the run list.
STOP	This option stops the run. The mobile phase composition and flow conditions in effect at the time of termination remain in effect. Data collection and pumping does not stop.
STOP PUMP	This option stops flow from the pumps. It is only available until the run starts.

Chart

Displays a strip chart for one, two, or several data channels.

Info Window

Lists commands and the time they were executed.

Control of Mobile Phase Pumps

Using Manual Control, you can instruct Gilson pumps to achieve a desired mobile phase composition and flow rate.

Controlling the Pumps

To control the pumps:

1 On the Manual Control window, click the Gradient button ( ).

2 In the Flow Rate box, type the desired flow rate.

3 In the Ramp Time box, type the ramp time over which to achieve the desired conditions.

4 For each pump except the first one, type the desired percent composition from that pump in the Value field.

5 After specifying all parameters, click **OK**.

Strip Chart Control

The Chart tab in the Manual Control window allows you to start and stop data collection. You can view a strip chart for one, two, or several data channels .

1 Choose **CHART** on the Manual Control window.

2 To begin viewing data from the channels, toggle Start Data Collection on by selecting the check box. The traces for the channels appear in the window.

3 Data collection continues until you clear the Start Data Collection check box or close the Manual Control window. When data collection is halted, a dialog box appears that enables you to save the collected data.

   If you select to save the strip chart, it is stored with other run results. (See ***Chapter 12, Results***.) TRILUTION LC also indicates in the Info Window that the result is a manual result (Manual Result: Yes).

Manually Sending Commands to Instruments

During manual control, you can send instructions to the instruments in the selected Configuration.

To issue a command to one of these instruments:

1 From the Command List, drag a command into the Commands workspace.

Or, select the command then click **ADD**.

For a description of the commands, refer to ***Appendix C, List of Commands***.

2 Set the properties for the command.

3 Continue adding commands, or click **RUN**.

Reorder Commands

To change the order in which commands are executed, select the command and then click **UP** or **DOWN**.

Remove Commands

To remove commands:

1 Select the command in the workspace.

2 Click **REMOVE** or press the Delete key on the keyboard.

To select multiple commands in a sequential order, hold SHIFT and then select the first and the last command in the sequence with the mouse.

To select commands in a random order, hold CTRL and select multiple commands with the mouse.

Data Storage

During a manual run, TRILUTION LC can generate data. See ***Chapter 12, Results*** for more information.

Re-Analysis Processing 11

You may decide to do a re-analysis for any of the following reasons:

- peaks were not integrated correctly
- peaks were not named
- injections were not labeled correctly
- wrong actual and nominal amounts were entered for samples
- you want different columns in the reports
- you want to remove background information
- you want to analyze unknown samples using a different calibration curve

The following parameters set in an Analysis affect how data are analyzed:

- analysis tasks (peak slope and sensitivity, baseline construction techniques)
- analysis channel
- quantification technique (area or height)
- peak table information
- reporting parameters
- chromatogram scaling parameters
- background subtraction

Refer to ***Chapter 7, Method Builder - Analysis*** for more information on how to set analysis parameters. Make the necessary changes to the Analysis so data is analyzed correctly. Then perform the re-analysis to generate a new report.

To get ready for and start a re-analysis, you:

1 Open the Run Result window.
2 Click **EDIT**. This opens the Method in the Method Builder.
3 Make any modifications to the Analysis or create additional Analyses.
4 Click **SAVE** in the Method Builder.
5 Close the Method Builder.
6 Click **RE-ANALYZE** in the Run Result window.

7 If re-analyzing a calibration, the Recalibration Amount window displays. Do any of the following:

- Add or remove samples from the calibration curve by selecting or clearing the check box next to the sample number.
- Modify the actual and nominal amounts for each peak.

8 Click **OK** to accept any changes made and re-analyze or click **CANCEL** to reject the changes made and re-analyze.

9 Optionally, manually adjust baselines and then click **SAVE**.

Chromatogram

Shows a chromatogram plot of the data being re-analyzed.

Manual Baseline Adjustment

You can view and modify the baseline generated for samples. Changes to the baseline affect peak integration reporting in all reports except the Standard Summary report.

You can adjust a peak's baseline, integrate a peak, or disable integration of a peak.

Adjusting a peak's baseline. To adjust the baseline beneath a peak, use the Move Baseline tool ( ) to select the peak and then point and drag the peak's begin or end point.

Integrating a peak. To integrate a peak not currently integrated, use the Insert Baseline tool ( ). Move the mouse pointer to the starting point for the peak. Click and drag the mouse pointer below a peak to draw its baseline. Release the mouse button to set the end point for the peak.

Removing peak integration. To inhibit integration of a peak, use the Move Baseline tool ( ) to select the peak and then click the Delete Baseline icon ( ).

To adjust the baseline:

1 Select either the begin point (up triangle) and end point (down triangle) for each integrated peak.

2 Drag to the desired location then release.

   a) To snap all point back to the baseline, click the Snap Baseline icon ( ).

   b) To snap point(s) back to the baseline, select the Snap Baseline Endpoint tool ( ) and then click each point to snap to the baseline.

3 Click **SAVE**.

Executing the Re-analysis

1 Click **RE-ANALYZE**.

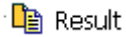
2 The software displays the message “Re-analysis complete” when processing completes.

Results 12

The Run Result window enables you to view chromatogram plots and analysis information for collected data. See ***Chapter 11, Re-Analysis Processing***.

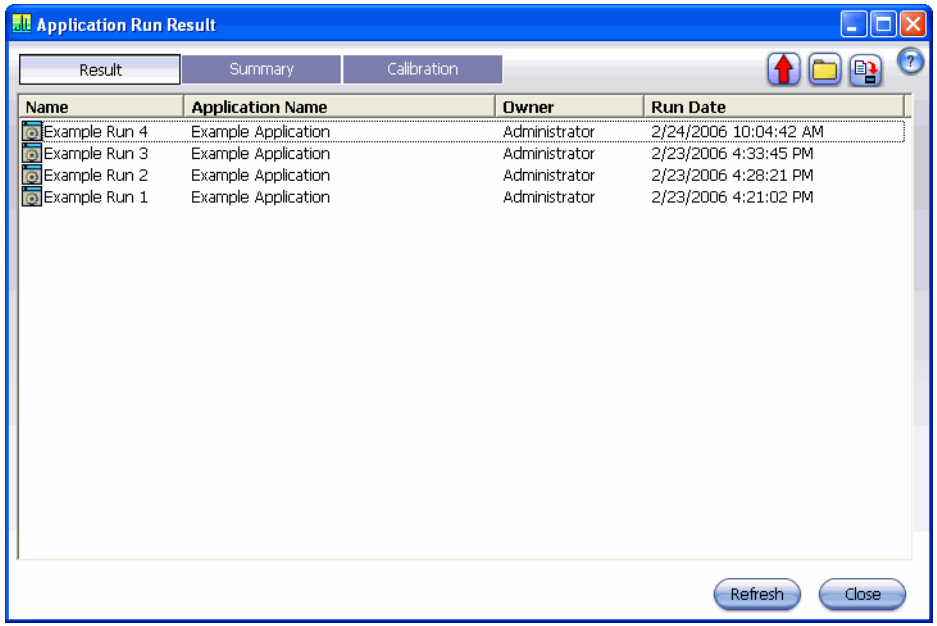
From a run, TRILUTION LC produces a Result file containing the channel data collected and stored for all injected samples. This Result file contains time and signal information for each sample.

To view results of data analysis, you preview the report file generated during a run or re-analysis processing.

Results are accessed by right-clicking on an Application in the Project Library and then choosing **RESULT** or by double-clicking the Result icon (). The Application Run Result window is displayed.

Application Run Result Window

Displays all runs for the Application. The exception is when runs have been archived, in which case they must be restored to be viewed.



Application Run Result window

To sort the run results, click on a column header. To sort in reverse order, click the column header again.

The following action buttons are located in the lower right corner of the Application Run Result window.

Action Button	*Description*
REFRESH	Allows you to reload the window with any new or imported run results.
CLOSE	Exits the Application Run Result window.

Result

Double-click the result name to show the result.

Right-click menu

Show Result

Displays stored collected data. Information for all samples injected during the run is stored here.

Export Run

Saves the run (data and Method) to an external location (i.e., network drive) as a Run Archive File (.LCRA). Can then be restored by the same user or another user.

To select multiple run results in a sequential order, hold SHIFT + any arrow key simultaneously.

To select run results in a random order, hold CTRL and select multiple run results with the mouse.

Archive Run

Saves the run (data and Method) to an external location (i.e., network drive) as a Run Archive File (.LCRA). Can then be restored by the same user or another user.

To select multiple run results in a sequential order, hold SHIFT + any arrow key simultaneously.

To select run results in a random order, hold CTRL and select multiple run results with the mouse.

The difference between Export and Archive is that Export leaves data in the Application Run Result Dialog, whereas Archive removes it. Both allow the data to be restored.

View Log

Opens the log file detailing information from the Info Window during the run in Microsoft® Notepad.

Rename

Allows you to rename the run.

Summary

Right-click menu

On right-click on a Method, a menu displays.

Summary Report

Opens the Summary Report.

Calibration

Double-click the analysis name to show the calibration plot.

Right-click menu

On right-click on the analysis name, a menu displays.

View

Displays the calibration plot which is used to calculate amounts for unknown samples. Examine the calibration curve generated for each standard peak. Viewing calibration plots is especially important if quadratic or cubic was the curve fitting method used to generate them.

Exporting a Run

To export a Run

1 On the Application Run Result Window, do one of the following:

- Select the run name and then right-click and select **EXPORT RUN**.
- Select the run name and then click .

The Select Export Path window is displayed.

To select multiple run results in a sequential order, hold SHIFT + any arrow key simultaneously.

To select run results in a random order, hold CTRL and select multiple run results with the mouse.

2 On the Select Export Path window, select a folder and click **SAVE**. On completion of the Export operation, the Run is saved in the specified folder with a .LCRA extension. The TRILUTION information dialog box is displayed.

You can create a new folder from the Select Export Path window.

3 On the TRILUTION information dialog box, do the following:

- To view the log information of the Export operation, click **DETAILS**.
- Click **OK**.

Archiving a Run

You will have to archive run data before the Application can be deleted.

To archive a Run

1 On the Application Run Result Window, select the run name and then do one of the following:

a) Click the Archive Results icon ( ).

b) Right-click and select **ARCHIVE RUN**.

The Select Archive Path window is displayed.

To select multiple run results in a sequential order, hold SHIFT + any arrow key simultaneously.

To select run results in a random order, hold CTRL and select multiple run results with the mouse.

The difference between Export and Archive is that Export leaves data in the Application Run Result Dialog, whereas Archive removes it. Both allow the data to be restored.

2 On the Select Archive Path window, select a folder and click **SAVE**. On completion of the Archive operation, the Run is saved in the specified folder with a .LCRA extension. The TRILUTION information dialog box is displayed.

You can create a new folder from the Select Archive Path window.

3 On the TRILUTION information dialog box, do the following:

- To view the log information of the Export operation, click **DETAILS**.
- Click **OK**.

Restoring a Run

You can restore a run that has been exported or archived.

To restore a run

1 On the Application Run Result Window, click the Restore Run icon ( ). The Select Run Archive File window is displayed.

2 From the Select Run Archive File window, do the following:

a) Browse for and select the Run Archived Files.

To select multiple runs in a sequential order, hold SHIFT + any arrow key simultaneously.

To select runs in a random order, hold CTRL and select multiple runs with the mouse.

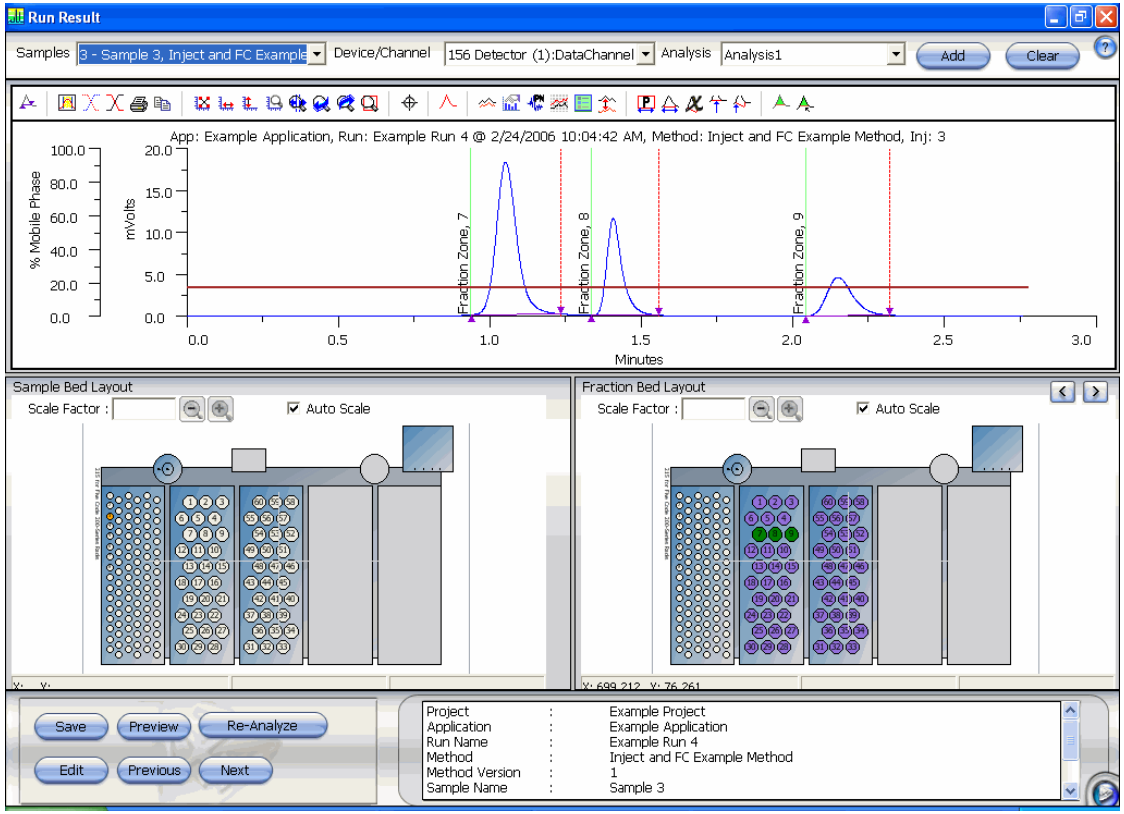
b) Click **OPEN**. On completion of the Import operation, the TRILUTION information box is displayed.

If a Task or any Task placed within a Task with the same name is found, an option is provided to import the Task as a new version, import all Tasks as new version, skip the import of all Tasks, or rename the Task.

c) On the TRILUTION information dialog box, do the following:

- To view the log information of the Import operation, click **DETAILS**.
- Click **OK**.

Run Result Window



Graph Pane

Shows the chromatogram plot for collected traces.

Toolbar

Choose available functions using the icons in the graph toolbar.

Icon	*Description*
	Toggles between hiding and showing the baseline.
	Toggles between hiding and showing fraction collection start and stop lines.
	Toggles between hiding and showing actual percent mobile phase
	Toggles between hiding and showing expected percent mobile phase
	Displays the print dialog for printing the chromatogram as it is currently viewed on-screen.
	Copies the chromatogram, as it is currently viewed on-screen, to the clipboard.
	Scales both axes to minimum and maximum values for the displayed trace(s).
	Scales the X-axis to minimum and maximum values for the displayed trace(s).
	Scales Y-axis to minimum and maximum values for the displayed trace(s).
	Returns view to the last zoom.
	Zooms in on a point and centers it in the chromatogram as it is viewed on-screen.

Icon	*Description*
	Returns view to last zoom (multiple undo zoom).
	Returns view to next zoom (multiple redo zoom).
	Enlarges lassoed portion of the graph.
	Displays the minutes and mVolts at the intersect of the crosshair.
	Displays the Peak Analysis Result window.
	Changes the color of the trace(s) and mobile phase and allows you to choose to show or hide each.
	Sets the lower limit, upper limit, increment value, and color for each axis.
	Changes the orientation and color of the peak name label(s) and allows you to choose to show or hide the label.
	Toggles showing or hiding the grid and allows you to change the color of the major (aligned with numbered tick marks) and/or minor (positioned between the numbered tick marks) grid lines.
	Toggles showing or hiding the legend.

Icon	*Description*
	Moves one or more of the trace(s). This option can be used to offset a chromatogram that is overlapping another. It can also be helpful when subtracting or dividing chromatograms since you can adjust for varying retention times by aligning peaks in the chromatogram.
	Allows you to move peak labels.
	Allows to select a peak for which the baseline will be modified or deleted.
	Deletes the selected baseline.
	Snaps all points to the baseline.
	Allows to snap point(s) to the baseline.
	Allows to color peaks. Named peaks use the color assigned in the peak table. Unnamed peaks use green.
	Inserts a new baseline.

Right-click menu

Select the Move Channel tool ( ) and then right-click on a trace to display the following menu options.

Menu	*Description*
SET OFFSET	Displays the Channel Offset Settings dialog which allows you to change the color of the displayed trace and offset the race in either the X (Minutes) or Y (mVolts) direction.
SET MVOLTS OFFSETS	After moving the trace, this option provides an additional menu to zero the trace (**ZERO**), return the trace to the previous setting (**LAST SETTING**), or revert to the original setting (**ORIGINAL SETTING**) in the Y-direction.
SET ALL MVOLTS OFFSETS	After moving multiple traces, this option provides an additional menu to zero the traces (**ZERO**), return the traces to the previous setting (**LAST SETTING**), or revert to the original settings (**ORIGINAL SETTING**) in the Y-direction.
SET MINUTES OFFSETS	After moving the trace, this option provides an additional menu to zero the trace (**ZERO**), return the trace to the previous setting (**LAST SETTING**), or revert to the original setting (**ORIGINAL SETTING**) in the X-direction.

Menu	*Description*
SET ALL MINUTES OFFSETS	After moving multiple traces, this option provides an additional menu to zero the traces (**ZERO**), return the traces to the previous setting (**LAST SETTING)**, or revert to the original settings (**ORIGINAL SETTING)** in the X-direction.
MOVE IN MINUTES ONLY	Allows you to move the trace only horizontally.
MOVE IN MVOLTS ONLY	Allows you to move the trace only vertically.

Viewing Results

View each trace

To view each trace collected for a sample, select the data channel from the ***Device/Channel*** drop-down list for the trace to display.

Compare traces for different samples in the same window

You can view traces collected for different samples in the same document window by doing the following:

1 Click **ADD** to browse previous runs for sample and channel combinations then click **OK** to add them to the display.

2 Repeat for each additional sample and channel combination to be added.

Note: You cannot overlay or merge data into an Analysis Report.

Removing overlaid trace(s)

To remove one or more overlaid traces from the graph, click **CLEAR**.

Analysis Report

The Analysis Report comprises four parts: Annotation (includes optionally a heading, listing of the analysis tasks, listing of the control tasks, details about the data channel settings, the peak table, a listing of the control error conditions, and a listing of the analysis error conditions), Graph (chromatogram), Sample Table (user-specified column contents, may include custom calculations), and Run Variables (a listing of values for all variables used in the application run). Each part is optional and can be omitted by clearing its check box on the Method Builder|Analysis|Report tab.

Viewing the Analysis Report

To view results from a chromatographic run, you can preview the Analysis Report to view analysis information.

Click **PREVIEW** to view report information for all samples for a single Method (selected from the ***Sample*** drop-down list), Device/Channel, and Analysis. If 41 or more samples use the same method, you will be prompted to select a sample range to display in the report. For more information about the analysis report and additional ways to view it, refer to ***Chapter 15, Generating Reports***.

Analyzing Data or Analyzing it in a Different Way

The Results window enables you to modify the Analysis in the Method so the data can be analyzed using new conditions. It also lets you modify analysis parameters so you can see how the changes affect the integration of peaks. You can then store the outcome of the analysis to an Analysis Report.

To modify the Analysis:

1 Click **EDIT**. The Method opens in the Method Builder.

2 Modify analysis parameters. You can:

- change the peak table. See page 7-27.
- change integration events. See page 7-4.
- change channel scaling parameters. See page 7-63.

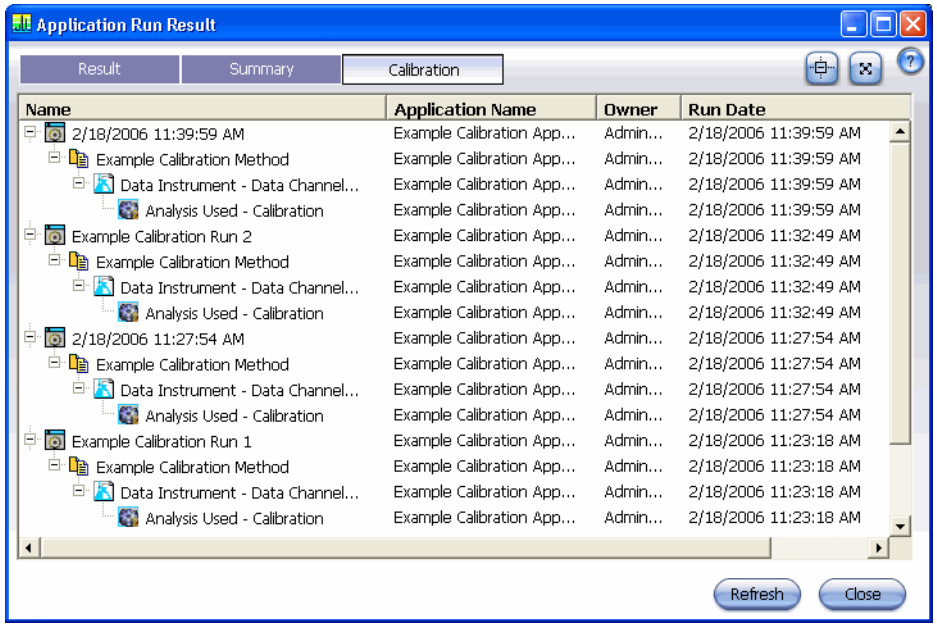
3 Click **SAVE** and optionally close the Method.

4 In the Run Result window, click **RE-ANALYZE**.

Calibrations 13

Calibration plots are generated during an HPLC run or a batch re-analysis of calibrator samples.

Calibrations are accessed by right-clicking on an Application in the Project Library and then choosing **RESULT** or by double-clicking the Result icon (Result). The Application Run Result window is displayed.



Application Run Result - Calibration window

Select the Calibration tab.

Application Run Result Window

Displays all runs (by number) for the Application. The exception is when runs have been archived, in which case they must be restored to be viewed.

To sort the run results, click on a column header. To sort in reverse order, click the column header again.

The following action buttons are located in the lower right corner of the Application Run Result window.

Action Button	*Description*
REFRESH	Allows you to reload the window with any new run results.
CLOSE	Exits the Application Run Result window.

Result

Double-click the result name to show the result.

Right-click menu

Show Result

Displays stored collected data. Information for all samples injected during the run is stored here.

Export Run

Saves the run (data and Method) to an external location (i.e., network drive) as a Run Archive File (.LCRA). Can then be restored by the same user or another user.

To select multiple run results in a sequential order, hold SHIFT + any arrow key simultaneously.

To select run results in a random order, hold CTRL and select multiple run results with the mouse.

Archive Run

Saves the run (data and Method) to an external location (i.e., network drive) as a Run Archive File (.LCRA). Can then be restored by the same user or another user.

To select multiple run results in a sequential order, hold SHIFT + any arrow key simultaneously.

To select run results in a random order, hold CTRL and select multiple run results with the mouse.

View Log

Opens the log file detailing information from the Info Window during the run in Microsoft® Notepad.

Rename

Allows you to rename the run.

Summary

Double-click the data instrument name - data channel name to launch the selected summary report (unknown or standard).

Right-click menu

On right-click on a data instrument name - data channel name, a menu displays.

Summary Report

Opens the Summary Report.

Calibration

Double-click the analysis name to show the calibration plot.

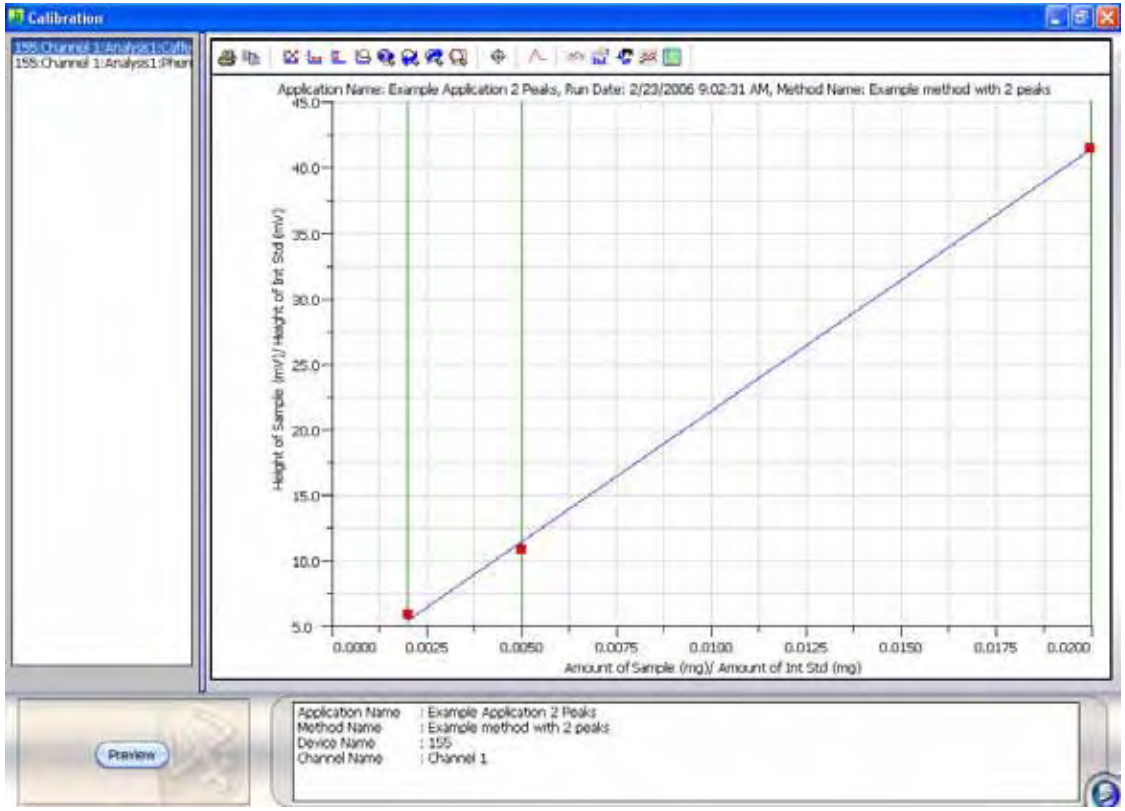
Right-click menu

On right-click on the analysis name, a menu displays.

View

Displays the calibration plot which is used to calculate amounts for unknown samples. Examine the calibration curve generated for each standard peak. Viewing calibration plots is especially important if quadratic or cubic was the curve fitting method used to generate them.

Calibration Window



The Calibration Window

Graph Pane

The graph pane shows the calibration plot.

Toolbar

Choose available functions using the icons in the graph toolbar.

Icon	*Description*
	Displays the print dialog for printing the chromatogram as it is currently viewed on-screen.
	Copies the chromatogram, as it is currently viewed on-screen, to the clipboard.
	Scales both axes to minimum and maximum values for the displayed trace(s).
	Scales the X-axis to minimum and maximum values for the displayed trace(s).
	Scales Y-axis to minimum and maximum values for the displayed trace(s).
	Returns view to the last zoom.
	Zooms in on a point and centers it in the chromatogram as it is viewed on-screen.
	Returns view to last zoom (multiple undo zoom).
	Returns view to next zoom (multiple redo zoom).
	Enlarges lassoed portion of the graph.
	Displays the minutes and mVolts at the intersect of the crosshair.

Icon	*Description*
	Displays the Peak Analysis Result window.
	Changes the color of the trace(s) and mobile phase and allows you to choose to show or hide each.
	Sets the lower limit, upper limit, increment value, and color for each axis.
	Changes the orientation and color of the peak name label(s) and allows you to choose to show or hide the label.
	Toggles showing or hiding the grid and allows you to change the color of the major (aligned with numbered tick marks) and/or minor (positioned between the numbered tick marks) grid lines.
	Toggles showing or hiding the legend.

Viewing Calibrations

View calibration curve

To view the calibration curve generated for each peak or data channel, select the peak from the list furthest left in the Calibration window.

Calibration Report

The Calibration Report comprises seven parts: Annotation (includes optionally a heading, listing of the analysis tasks, listing of the control tasks, details about the data channel settings, the peak table, a listing of the control error conditions, and a listing of the analysis error conditions), Graph (chromatogram), Sample Table (user-specified column contents, may include custom calculations), and Run Variables (a listing of values for all variables used in the application run), Calibration Plot (the calibration curve data generated by the standards), and Calibration Plot Table (user-specified column contents for standards and controls, may include custom calculations).

Viewing the Calibration Report

To view results from a chromatographic run in which calibrators were injected, you can preview the Calibration Report to view calibration information.

Click **PREVIEW** to view report information.

The Calibration Report appears, displaying the report information selected on the Method Builder|Analysis|Report tab for the selected peak.

Recalibration and Re-analysis

The Recalibration window allows you to add or remove samples from the calibration curve. You can also modify the actual and nominal amounts for each peak. The outcome of the recalibration is stored to a Calibration Report.

To modify the Calibration:

1 Access the Run Result window by double-clicking the run name in the Results tab of the Application Run Result window.

2 Click **RE-ANALYZE**.

3 The Recalibration Amount window displays. Do any of the following:

- Add or remove samples from the calibration curve by selecting or clearing the check box next to the sample number.
- Modify the actual and nominal amounts for each peak.

4 Click **OK** to accept any changes made and re-analyze or click **CANCEL** to reject the changes made and re-analyze.

Exporting a Calibration

To export a Calibration

1 On the Application Run Result Window, do one of the following:

- Select the run name and then right-click and select **EXPORT RUN**.
- Select the run name and then click .

The Select Export Path window is displayed.

> **To select multiple run results in a sequential order, hold SHIFT + any arrow key simultaneously.**
>
> **To select run results in a random order, hold CTRL and select multiple run results with the mouse.**

2 On the Select Export Path window, select a folder and click **SAVE**. On completion of the Export operation, the Run is saved in the specified folder with a .LCRA extension. The TRILUTION information dialog box is displayed.

> **You can create a new folder from the Select Export Path window.**

3 On the TRILUTION information dialog box, do the following:

- To view the log information of the Export operation, click **DETAILS**.
- Click **OK**.

Archiving a Calibration

You will have to archive run data before the Application can be deleted.

To archive a Calibration

1 On the Application Run Result Window, select the run name and then do one of the following:

a) Click the Archive Results icon ( ).

b) Right-click and select **ARCHIVE RUN**.

The Select Archive Path window is displayed.

To select multiple run results in a sequential order, hold SHIFT + any arrow key simultaneously.

To select run results in a random order, hold CTRL and select multiple run results with the mouse.

The difference between Export and Archive is that Export leaves data in the Application Run Result Dialog, whereas Archive removes it. Both allow the data to be restored.

Restoring a Calibration

You can restore a calibration run that has been exported or archived.

To restore a calibration

1 On the Application Run Result Window, click the Restore Run icon ( ). The Select Run Archive File window is displayed.

2 From the Select Run Archive File window, do the following:

a) Browse for and select the Run Archived Files.

To select multiple runs in a sequential order, hold SHIFT + any arrow key simultaneously.

To select runs in a random order, hold CTRL and select multiple runs with the mouse.

b) Click **OPEN**. On completion of the Import operation, the TRILUTION information box is displayed.

If a Task or any Task placed within a Task with the same name is found, an option is provided to import the Task as a new version, import all Tasks as new version, or rename the Task.

c) On the TRILUTION information dialog box, do the following:

- To view the log information of the Import operation, click **DETAILS**.
- Click **OK**.

Working with Expressions, Variables, and Operators 14

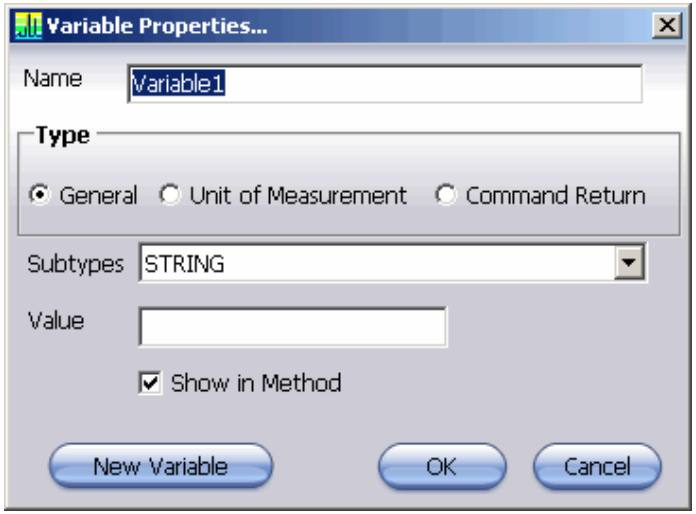
Variables, Operators, and Expressions form the building blocks of Tasks and Methods, which accept run time values to perform actions.

Variables

A Variable container

A Variable is a named container that accepts values for the properties specified at the Task level or Method level. A Variable can be defined for the following:

- A Command
- A Loop
- An Expression
- A Conditional Operator
- An Unconditional Operator
- A Task



The Variable Properties... window

In the *Variable Properties...* window, you can define the following:

a) A unique Variable name.

b) A Variable type and its subtypes.

On selection of the Variable type, the subtypes get populated in the Type field.

c) A Variable value.

d) An option to display the Variable in the Method Builder.

e) An option to create a new Variable.

Variable Types

Variables are of the following types:

- **General:** This Variable can be defined for numerical or string values.
- **Unit Of Measurement:** This Variable can be defined for properties with units.
- **Command Return:** This Variable can be used to store return values of commands.

Task Variables

Adding Variables

1 From the Operators palette, drag the Variable operator and drop it in the Workspace. The Variable container with the *Variable Properties...* window is displayed.

A Variable is always positioned at the beginning of a Task.

2 On the *Variable Properties...* window, do the following:

a) In the ***Name*** field, type a Variable name.

b) From the ***Type*** frame, select a Variable type from the following:

- General
- Unit Of Measurement
- Command Return

c) In the ***Subtypes*** field, click the arrow and then select a subtype from the drop-down list.

d) In the ***Value*** field, type the value.

e) Click **OK**.

Viewing and/or Modifying Variable Properties

1 Select the Variable in the workspace and do one of the following.

- Double-click.
- Right-click on the Variable and then on the submenu displayed, click **PROPERTIES**.

The selected Variable properties window is displayed.

Deleting Variables

1 On the Variable, do one of the following:

- Right-click to display a submenu. On the submenu, click **DELETE**.
- Select the Variable in the workspace and then press the **DELETE** key on the keyboard.

  The selected Variable is deleted.

Method Variables

Adding Variables

1 On the Control tab, click the Method Variables icon ( ).

2 Right-click in the dialog and select **ADD**. The *Variable Properties...* dialog is displayed.

3 On the *Variable Properties...* window, do the following:

a) In the ***Name*** field, type a Variable name.

b) From the ***Type*** frame, select a Variable type from the following:

- General
- Unit Of Measurement
- Command Return

c) In the ***Subtypes*** field, click the arrow and then select a subtype from the drop-down list.

d) In the ***Value*** field, type the value.

e) Click **OK**.

Viewing and/or Modifying Variable Properties

1 On the Control tab, click the Method Variables icon ( ).

2 Select the row for the variable, right-click and then select **MODIFY**. The ***Variable Properties...*** dialog is displayed.

Deleting Variables

1 On the Control tab, click the Method Variables icon ( ).

2 Select the row for the variable, right-click and then select **DELETE**.

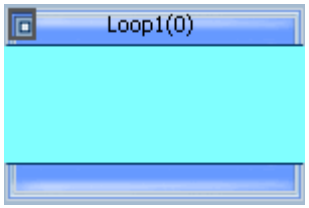
Operators

Operators are used to define Expressions and check for the specific conditions. Based on their functionality, the Operators are grouped as listed below:

- Branching Operators, like the Loop...EndLoop operator.
- Conditional Operators, like the If..EndIf and If..Else operators.
- Unconditional Operators, like the Goto and Label operators.

Branching Operators

Loop...EndLoop

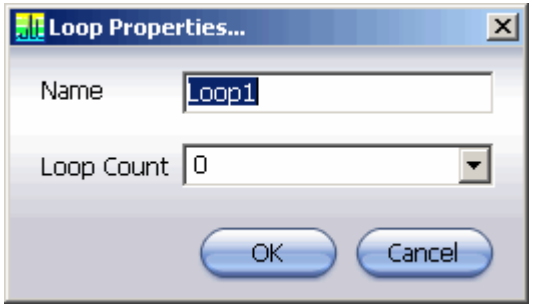


The Loop container

A Loop is a repetition of actions or statements. You can drag a Loop and drop it in the workspace. Tasks, Commands, Conditional operators, Expressions, Goto and Labels can be added inside a Loop.

You can drag a Loop and drop it inside an existing Loop to build a Nested Loop.

The button on the upper-left corner of the Loop container allows you to collapse or expand the Loop container.



The Loop Properties... window

A Loop has the following set of properties defined in the *Loop Properties...* window:

- **Name**: Defines the Loop name, which appears as the title of the Loop.
- **Loop Count:** Requires a numeric value, which represents the number of times the Loop will be executed. You can define a Variable for the Loop Count field. The value appears in brackets next to the Loop name.

To add a Loop operator

1 From the Operators palette, drag a Loop operator and drop it in the workspace. The Loop container with the *Loop Properties...* window is displayed.

2 On the *Loop Properties...* window, do the following:

a) In the ***Name*** field, type a Loop name.

b) In the ***Loop Count*** field, type the number of times for the Loop to repeat.

c) Click **OK**.

A Loop can be positioned anywhere in the workspace depending on where it is dropped.

To delete a Loop operator

1 On the Loop container, do one of the following:

- Select the Loop container in the workspace and press the DELETE key on the keyboard.
- Right-click the Loop container to display a submenu. On the submenu, click **DELETE**.

The selected Loop is deleted.

To delete the Commands, Operators, Tasks within a Loop

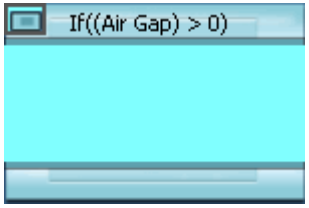
In the Loop container, do one of the following:

- Select any action defined and press the **DELETE** key on the keyboard.
- Right-click any action to display a submenu. On the submenu, click **DELETE.**

The selected action is deleted.

Conditional Operators

If..EndIf Operator

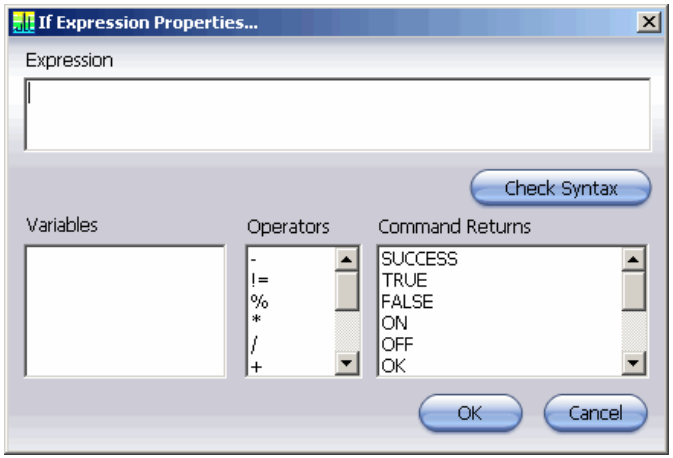


The If..EndIf container

This operator allows you to perform a set of actions only if the defined condition is satisfied. You can drag an If..EndIf operator and drop it in the workspace. Tasks, Commands, Expressions, GoTo Labels, and Loops can be placed inside this Operator.

The upper bar of the container depicts the beginning of the If..EndIf operator. The lower bar of the container depicts the end of the If..EndIf operator.

An If..EndIf operator can be positioned anywhere in the workspace depending on where it is dropped.



The If Expression Properties... window

The If..EndIf operator has the *If Expression Properties...* as a property window. You can create expressions using the Variables, Operators, Command Returns or Constant values, separated by the operators.

An Expression comprises two sections listed below:

- Left Hand Side (LHS): The section before the operator is the LHS and contains a single variable only.
- Right Hand Side (RHS): The section after the operator is the RHS. It contains Constants, Variables or Command Return values separated by mathematical operators.

In the *If Expression* Properties... window, you can do the following:

a) ***Expression***: Allows you to create an expression.

b) ***Variables***: Lists all the variables defined, which can be used to create an expression.

c) ***Operators***: Lists the operators, which can be used to create an expression. The operators are grouped based on their functionality.

The following represent the Mathematical operators:

- =: Assignment operator
- +: Additional operator
- -: Subtraction operator
- *: Multiplication operator
- /: Division operator
- %: Modulus operator

The following represent the Comparison operators. These operators are used for comparison and reasoning activities.

- <: Less than
- >: Greater than

- >=: Greater than or equal to
- <=: Less than or equal to
- ==: Equal to
- !=: Inequal to

d) ***Command Returns***: Lists all the Command Return values, which can be used to create an expression.

e) **CHECK SYNTAX**: Allows you to check the validity of the expression created. The Variable on the LHS and the constants, Variables, Command Return on the RHS should have compatible data types.

You can have only a conditional operator between the LHS and the RHS. An RHS can have only one constant, variable or command return value.

Example: 1

X < Y + 10.46

X is a Variable of type Number.

Y is a Variable of type Number.

10.46 is a Number.

The above expression is a valid expression.

Example: 2

X > Y + Z

X is a Variable of type Number.

Y is a Variable of type String.

Z is a Variable of type Number.

The RHS Variable is of type String and the LHS Variable is of type Number. The above expression is an invalid expression.

To add an If...Endif operator

1 From the Operators palette, drag an If..EndIf operator and drop it in the workspace. The If..Endif operator container with the *If Expression Properties...* window is displayed in the workspace.

2 In the *If Expression Properties...* window, do the following:

a) To build the LHS, double-click a Variable from the Variables list. The Variable is populated in the ***Expression*** field.

b) From the **Operators** list, double-click a comparison operator.

c) To build the RHS, select Variables from the **Variables** list or type constant values or select a Command Return value from the Command Returns list separated by mathematical operators.

You can type an expression by typing the Variables, Operators, Constants and Command Return values.

d) Click **CHECK SYNTAX** to check the validity of the expression built.

e) Click **OK**.

To delete an If..EndIf operator

1 On the If..EndIf container, do one of the following:

- Select the If..EndIf container in the workspace and press the **DELETE** key on the keyboard.
- Right-click the If..EndIf container to display a submenu. On the submenu, click **DELETE**.

The selected If..EndIf operator is deleted.

To delete the Commands, Operators, Tasks within an If..EndIf operator

1 In the If..EndIf container, do one of the following:

- Select any action defined and press the **DELETE** key on the keyboard.
- Right-click any action to display a submenu. On the submenu, click **DELETE**.

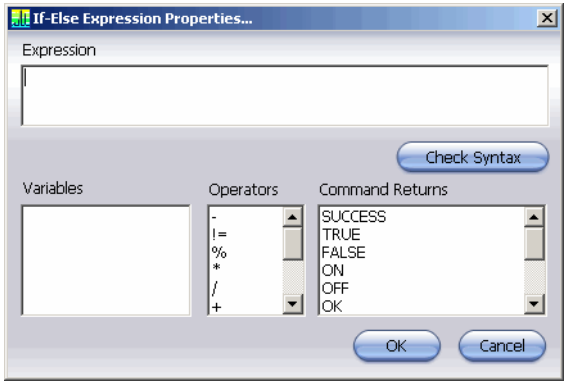
The selected action is deleted.

If...Else Operator

This operator consists of two blocks, namely, the If block and the Else block. You can drag an If..Else operator and drop it in the workspace.

For details, see **If..EndIf Operator** on page 14-11.

An If..Else operator can be positioned anywhere in the workspace depending on where it is dropped.



If-Else Expression Properties... window

To delete an If..Else operator

1 On the If..Else container, do one of the following:

- Select the If..Else container in the workspace and press the **DELETE** key on the keyboard.
- Right-click the If..Else container to display a submenu. On the submenu, click **DELETE**.

The selected If..Else operator is deleted.

To delete the Commands, Operators, Tasks within an If..Else operator

1 In the If..Else container, do one of the following:

- Select any action defined and press the **DELETE** key on the keyboard.
- Right-click any action to display a submenu. On the submenu, click **DELETE**.

The selected action is deleted.

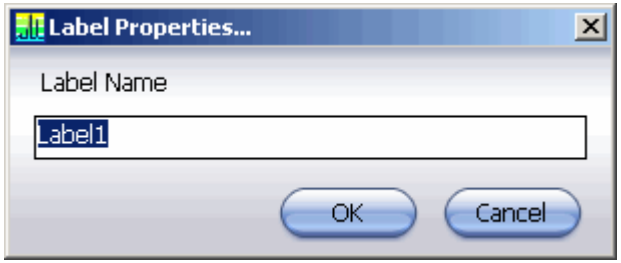
Unconditional Operators

Label Operator

The Label container

This operator allows you to create labels. These labels are used by the Goto operator. You can drag a Label and drop it in the workspace.

A Label operator can be positioned anywhere in the workspace depending on where it is dropped.



The Label Properties... window

A Label has a *Label Properties...* window. In the *Label Properties...* window, you can define the label name. The label name is displayed in the Label container.

A Label name should be unique.

To add a Label

1 From the *Operators* palette, drag a Label and drop it in the workspace. The Label container with the *Label Properties...* window is displayed on the workspace.

2 In the *Label Properties...* window, type a label name in the ***Label Name*** field.

3 Click **OK**.

Labels created are populated in the *Goto Properties...* window.

To delete a Label

1 On the Label, do one of the following:

- Right-click to display a submenu. On the submenu, click **DELETE**. The selected Label is deleted.
- Select the Label container in the workspace and press the **DELETE** key.

Goto Operator

The Goto container

This operator points to the Label defined. A Label marks a destination for a Goto operator. Hence, a Label should be created before creating a Goto operator.

You can add a Goto operator in a Task, Method, Loop, If..EndIf, If..Else operator.

A Goto operator can be positioned anywhere in the workspace depending on where it is dropped.

The Goto Properties... window

The Goto operator has Goto Properties as a property window. The Labels are populated in the *Goto Properties...* window. You can select any Label in the *Goto Properties...* window.

Labels defined only in the parent block and in the same block of the Goto operator are populated in the *Goto Properties...* window. A Label defined in a different block or in a child block of the Goto operator does not get populated in the *Goto Properties...* window.

To add a Goto operator

1 From the *Operators* palette, drag a Goto operator and drop it in the workspace. The Goto container with the *Goto Properties...* window is displayed on the workspace.

2 In the *Goto Properties...* window, select a label from the ***Select Label for Goto*** field.

3 Click **OK**.

To delete a Goto

1 On the Goto operator, do one of the following:

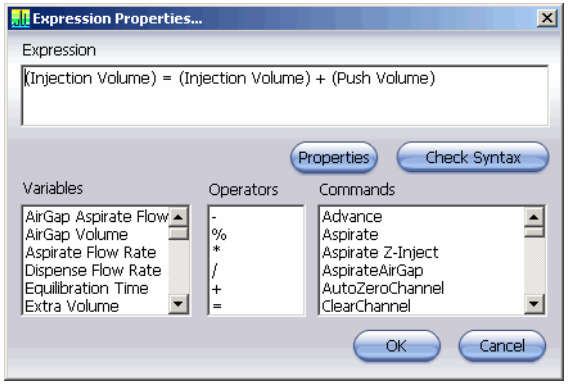
- Right-click to display a submenu. On the submenu, click **DELETE**. The selected Goto is deleted.
- Select the Goto operator and press the Delete key on the keyboard.

Expressions

The Expression container

An Expression is a statement used to perform calculations and derive the expected results. You can drag an Expression and drop it in the workspace. You can build an Expression using Constants, Variables, and Commands separated by Operators.

An Expression can be positioned anywhere in the workspace depending on where it is dropped.



The Expression Properties... window

An Expression has an *Expression Properties...* window. The Variables previously declared for the opened Task in the workspace get populated in the Variables list. The Commands get populated in the Commands list.

Commands are not available in the Method Builder.

An Expression comprises two sections listed below:

- Left Hand Side (LHS): The section before the operator is the LHS and contains a single variable only.
- Right Hand Side (RHS): The section after the operator is the RHS. It contains Constants, Variables or Commands separated by mathematical operators.

In the *Expression Properties...* window, you can do the following:

a) ***Expression:*** Allows you to create an expression.

b) ***Variables:*** Lists all the Variables defined, which be used to create an expression.

c) ***Operators:*** Lists the operators, which can be used to create an expression. The following operators are represented as Mathematical operators:

- =: Assignment operator
- +: Additional operator
- -: Subtraction operator
- *: Multiplication operator

- /: Division operator
- %: Modulus operator

d) ***Commands:*** Lists all the Commands, which can be used to create an Expression.

e) **CHECK SYNTAX**: Allows you to check the validity of the Expression created. The Variable on the LHS and the Constants, Variables, Commands on the RHS should have compatible data types.

f) **PROPERTIES**: Allows you to view the properties of the Command when you place the cursor on the Command in the Expression.

You can have only an Assignment operator between the LHS and the RHS. An RHS can have any number of Constants, Variables or a Command separated by mathematical operators.

To create an Expression

1 From the Operators palette, drag the Expression and drop it in the Workspace. The Expression container with the *Expression Properties...* window is displayed in the workspace.

2 On the *Expression Properties...* window, do the following:

a) To build the LHS, double-click a Variable from the **Variables** list. The Variable is populated in the **Expression** field.

b) From the **Operators** list, double-click an Assignment Operator.

c) To build the RHS, select Variables from the **Variables** list or type constant values or select a Command from the **Commands** list separated by mathematical operators.

You can build an Expression by typing the Variables, Operators, Constants and Commands.

d) Click **CHECK SYNTAX** to check the validity of the Expression built.

e) Click **OK**.

To delete an Expression

1 On the Expression operator, do one of the following:

- Right-click to display a submenu. On the submenu, click **DELETE**. The selected Expression is deleted.
- Select the Expression in the workspace and press Delete key on the keyboard.

Example 1

X = Y + 10.46

X is a Variable of type Number.

Y is a Variable of type Number.

10.46 is a Number.

The above expression is a valid expression.

Example 2

X = Y + Z

X is a Variable of type Number.

Y is a Variable of type String.

Z is a Variable of type Number.

The RHS Variable is of type String and the LHS Variable is of type Number.

The above expression is an invalid expression.

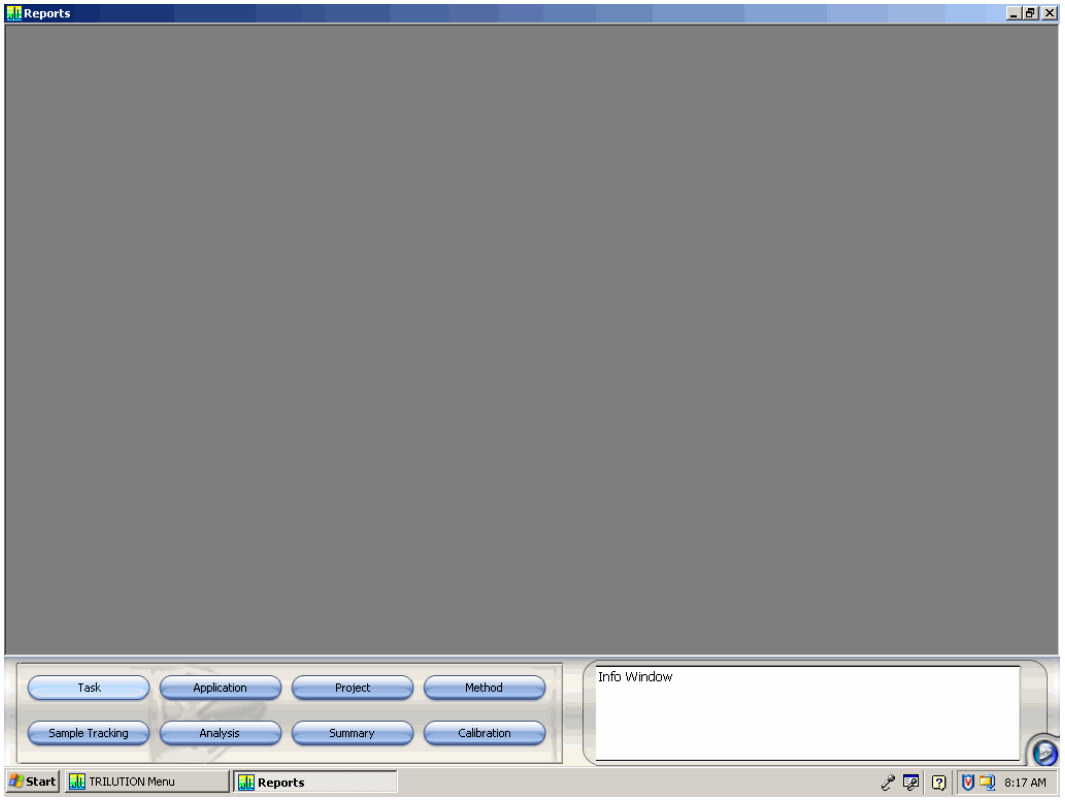
Generating Reports 15

The Reports menu is used to generate reports. You can view and print reports directly or export them to rich text format (*.rtf), Adobe® PDF (*.pdf), Microsoft® Word (*.doc), or Microsoft® Excel (*.xls) file types for further study and formatting.

The Reports Window

To open a Report window

On the TRILUTION LC Menu, click **REPORTS**. The Reports window is displayed.



The Reports Window

Reports Overview

You can generate the following types of reports:

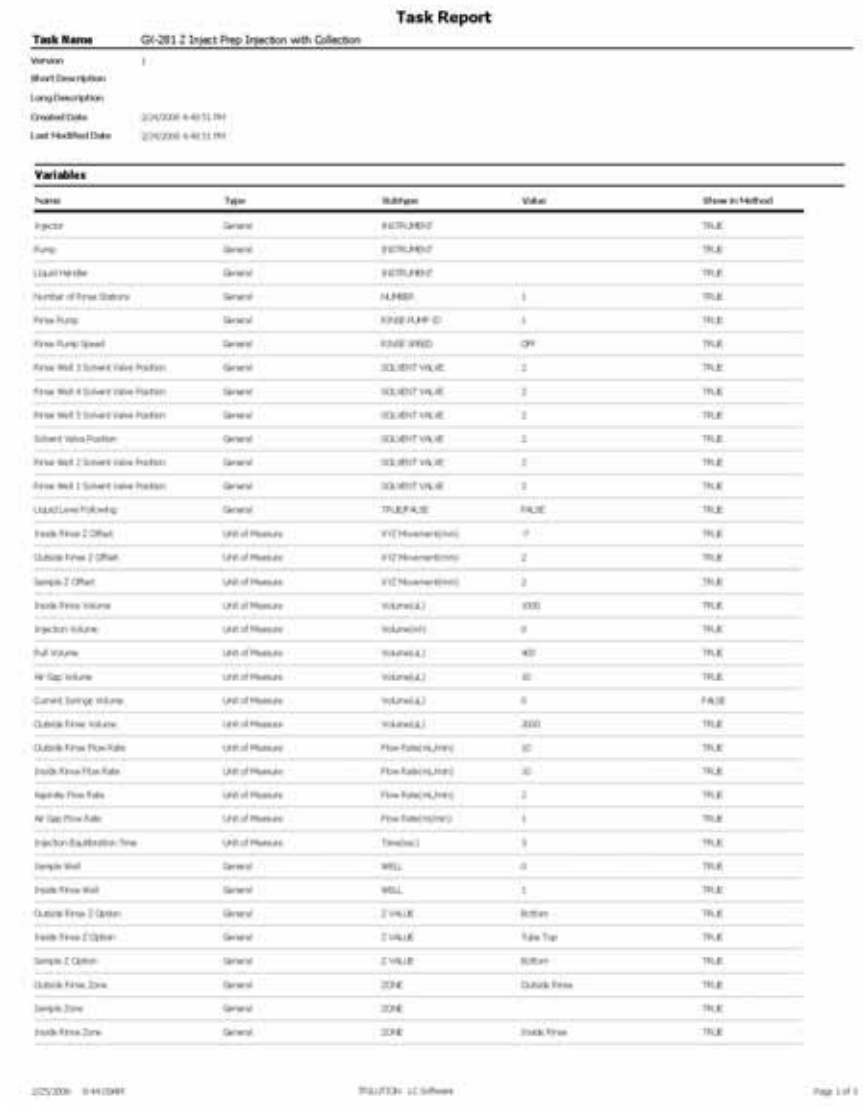
Report	*Description*
Task	This report comprises three parts: a brief summation of the task information (name, version, description, modified date, and created date), variables defined for the task (Variables), and the un-timed, sequential steps (Steps).
Sample Tracking	This report comprises a brief summation of the application run information (project name, application name, run name, run date, run by) and the aspirate and dispense actions for each sample and fraction.
Run	This report comprises five parts: a brief summation of the application run information (project name, application name, run name, run date, run by), sample list details (including values for variables) captured at the end of the run, initial volumes, fraction re-injection criteria, and minimum fraction sites criteria.
Analysis	This report comprises four parts: Annotation (includes optionally a heading, listing of the analysis tasks, listing of the control tasks, details about the data channel settings, the peak table, a listing of the control error conditions, and a listing of the analysis error conditions), Graph (chromatogram), Sample Table (user-specified column contents, may include custom calculations), and Run Variables (a listing of values for all variables used in the application run). Each part is optional and can be omitted by clearing its check box on the Method Builder|Analysis|Report tab. The analysis report can be generated and viewed for an individual sample or for a range of samples. Optionally, a company logo and address can be added to this report.

Report	*Description*
Project	This report comprises three parts: a brief summation of the project information (name, description, modified date, and created date), a brief summation of the application information for each application in the project (name, description, modified date, and created date), and a brief summation of the method information for each method in each application in the project (name, description, modified date, created date, and names of the configuration, bed layout, control, and analysis).
Summary	This report comprises five parts: a brief summation of the run and selected data channel (project name, application name, method name, method version, data instrument name, data channel name, analysis name, report name, run name, and run date), timed integration task listing (Analysis Tasks), details about the data channel settings (Data Channel Settings), a listing of values for all variables used in the application run (Method Variables), the Peak Table, and a Summary Table. The Summary Report can be generated and viewed as an Unknown Summary Report or a Standard Summary Report.

Report	*Description*
Method	This report comprises six parts: a brief summation of the method information (name, version, descriptions, modified date, and created date), configuration information, bed layout information (racks used), control information (timed sequential task listing), analysis information (timed integration task listing), and report information (options used in the Analysis and Calibration reports). Optionally, a company logo and address can be added to this report.
Calibration	This report comprises seven parts: Annotation (includes optionally a heading, listing of the analysis tasks, listing of the control tasks, details about the data channel settings, the peak table, a listing of the control error conditions, and a listing of the analysis error conditions), Graph (chromatogram), Sample Table (user-specified column contents, may include custom calculations), and Run Variables (a listing of values for all variables used in the application run), Calibration Plot (the calibration curve data generated by the standards), and Calibration Plot Table (user-specified column contents for standards and controls, may include custom calculations). The Calibration Report can be generated and viewed for each peak. Optionally, a company logo and address can be added to this report.

Task Report

This report comprises three parts: a brief summation of the task information (name, version, description, modified date, and created date), variables defined for the task (Variables), and the un-timed, sequential steps (Steps). Refer to the example on the next page.



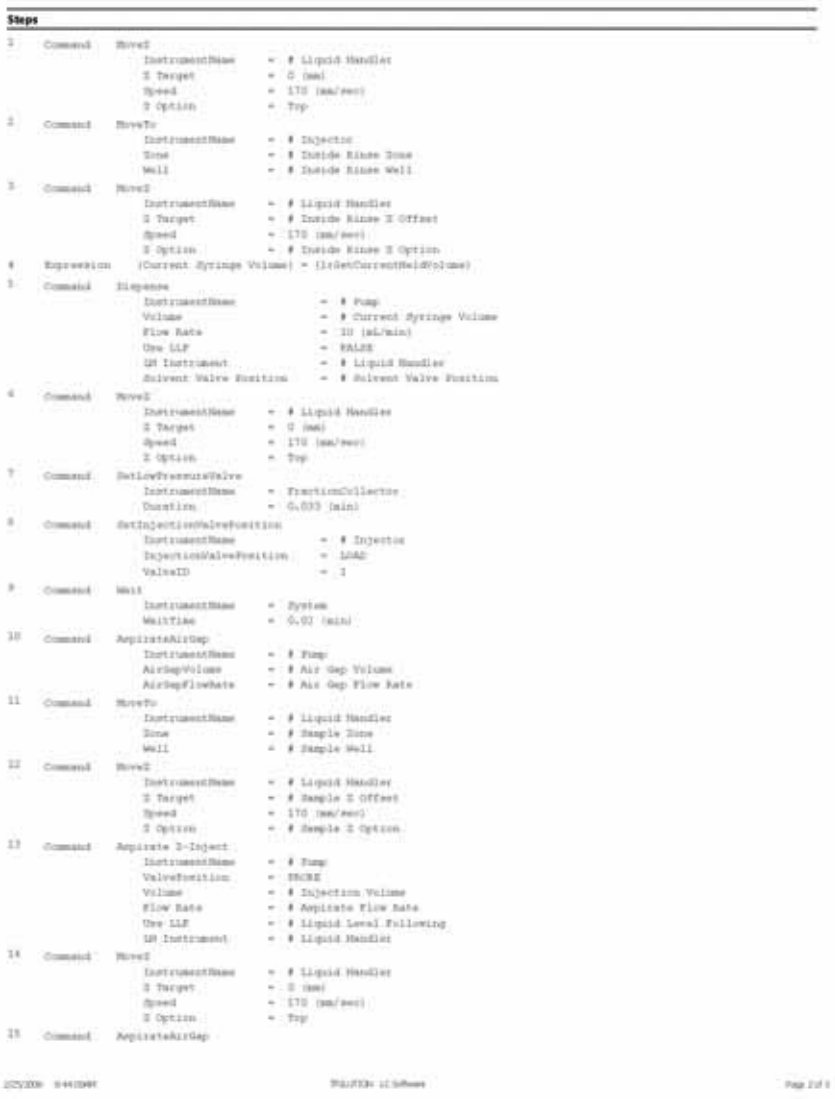
Task Report

Task Name	GV-281 Z Inject Prep Injection with Collection
Version	1
Short Description	
Long Description	
Created Date	2/4/2008 6:40:51 PM
Last Modified Date	2/4/2008 6:40:51 PM

Variables

Name	Type	SubType	Value	Show in Method
Injector	General	INSTRUMENT		TRUE
Pump	General	INSTRUMENT		TRUE
Liquid Handler	General	INSTRUMENT		TRUE
Number of Rinse Stations	General	NUMBER	1	TRUE
Rinse Pump	General	RINSE PUMP ID	1	TRUE
Rinse Pump Speed	General	RINSE SPEED	OFF	TRUE
Rinse Well 3 Solvent Valve Position	General	SOLVENT VALVE	1	TRUE
Rinse Well 4 Solvent Valve Position	General	SOLVENT VALVE	1	TRUE
Rinse Well 5 Solvent Valve Position	General	SOLVENT VALVE	1	TRUE
Solvent Valve Position	General	SOLVENT VALVE	1	TRUE
Rinse Well 2 Solvent Valve Position	General	SOLVENT VALVE	1	TRUE
Rinse Well 1 Solvent Valve Position	General	SOLVENT VALVE	1	TRUE
Liquid Level Following	General	TRUE/FALSE	FALSE	TRUE
Inside Rinse Z Offset	Unit of Measure	V1[Movement/min]	-7	TRUE
Outside Rinse Z Offset	Unit of Measure	V1[Movement/min]	2	TRUE
Sample Z Offset	Unit of Measure	V1[Movement/min]	2	TRUE
Inside Rinse Volume	Unit of Measure	Volume[uL]	1000	TRUE
Injection Volume	Unit of Measure	Volume[ml]	0	TRUE
Pull Volume	Unit of Measure	Volume[uL]	400	TRUE
Air Gap Volume	Unit of Measure	Volume[uL]	10	TRUE
Current Syringe Volume	Unit of Measure	Volume[uL]	0	FALSE
Outside Rinse Volume	Unit of Measure	Volume[uL]	2000	TRUE
Outside Rinse Flow Rate	Unit of Measure	Flow Rate[mL/min]	10	TRUE
Inside Rinse Flow Rate	Unit of Measure	Flow Rate[mL/min]	10	TRUE
Aspirate Flow Rate	Unit of Measure	Flow Rate[mL/min]	2	TRUE
Air Gap Flow Rate	Unit of Measure	Flow Rate[ml/min]	1	TRUE
Injector Equilibration Time	Unit of Measure	Time[sec]	3	TRUE
Sample Well	General	WELL	0	TRUE
Inside Rinse Well	General	WELL	1	TRUE
Outside Rinse Z Option	General	Z VALUE	Bottom	TRUE
Inside Rinse Z Option	General	Z VALUE	Tube Top	TRUE
Sample Z Option	General	Z VALUE	Bottom	TRUE
Outside Rinse Zone	General	ZONE	Outside Rinse	TRUE
Sample Zone	General	ZONE		TRUE
Inside Rinse Zone	General	ZONE	Inside Rinse	TRUE

2/5/2008 6:44:09 PM TRILUTION LC Software Page 1 of 3



Steps

```
1   Command   MoveZ
                InstrumentName     = # Liquid Handler
                Z Target           = 0 (mm)
                Speed              = 170 (mm/sec)
                Z Option           = Top
2   Command   MoveTo
                InstrumentName     = # Injector
                Zone               = # Inside Rinse Zone
                Well               = # Inside Rinse Well
3   Command   MoveZ
                InstrumentName     = # Liquid Handler
                Z Target           = # Inside Rinse Z Offset
                Speed              = 170 (mm/sec)
                Z Option           = # Inside Rinse Z Option
4   Expression  (Current Syringe Volume) = (IrisGetCurrentHeldVolume)
5   Command   Dispense
                InstrumentName           = # Pump
                Volume                   = # Current Syringe Volume
                Flow Rate                = 10 (uL/min)
                Use LLF                  = FALSE
                LH Instrument            = # Liquid Handler
                Solvent Valve Position   = # Solvent Valve Position
6   Command   MoveZ
                InstrumentName     = # Liquid Handler
                Z Target           = 0 (mm)
                Speed              = 170 (mm/sec)
                Z Option           = Top
7   Command   SetLowPressureValve
                InstrumentName     = FractionCollector
                Duration           = 0.033 (min)
8   Command   SetInjectionValvePosition
                InstrumentName           = # Injector
                InjectionValvePosition   = LOAD
                ValveID                  = 1
9   Command   Wait
                InstrumentName     = System
                WaitTime           = 0.02 (min)
10  Command   AspirateAirGap
                InstrumentName     = # Pump
                AirGapVolume       = # Air Gap Volume
                AirGapFlowRate     = # Air Gap Flow Rate
11  Command   MoveTo
                InstrumentName     = # Liquid Handler
                Zone               = # Sample Zone
                Well               = # Sample Well
12  Command   MoveZ
                InstrumentName     = # Liquid Handler
                Z Target           = # Sample Z Offset
                Speed              = 170 (mm/sec)
                Z Option           = # Sample Z Option
13  Command   Aspirate Z-Inject
                InstrumentName     = # Pump
                ValvePosition      = INJECT
                Volume             = # Injection Volume
                Flow Rate          = # Aspirate Flow Rate
                Use LLF            = # Liquid Level Following
                LH Instrument      = # Liquid Handler
14  Command   MoveZ
                InstrumentName     = # Liquid Handler
                Z Target           = 0 (mm)
                Speed              = 170 (mm/sec)
                Z Option           = Top
15  Command   AspirateAirGap
```

2/5/2008 6:44:09 PM TRILUTION LC Software Page 2 of 3

Run Report

This report comprises five parts: a brief summation of the application run information (project name, application name, run name, run date, run by), sample list details (including values for variables) captured at the end of the run, initial volumes, fraction re-injection criteria, and minimum fraction sites criteria. Refer to the example on the next page.

Run Report

Project Name: Test 1
Application Name: Test 1 Application
Run Name: Test 1
Run Date: 2/25/2008 9:19:45 AM
Run By: Administrator

Sample List

	Method Name	Sample Name	Amount	Sample Description	Sample Type	(Analysis) Peak Name	Actual Amount (mg)	Nominal Amount (mg)	Sample Re-injection	Notes
1	Test 1 Startup Method (1)	Startup	0		UNKNOWN				FALSE	TRUE

Notes
Initializing System

Variables

#FLOW RATE 1	#FLOW RATE 2								
5	10								

	Method Name	Sample Name	Amount	Sample Description	Sample Type	(Analysis) Peak Name	Actual Amount (mg)	Nominal Amount (mg)	Sample Re-injection	Notes
2	Test 1 Inject and PC Method (1)	Sample 1	0		UNKNOWN				TRUE	FALSE

Variables

#INJECTION VOLUME	#SAMPLE WELL								
500	1								

Sample Re-injection Criteria

Method Executed: Test 1 Inject and PC Method Version: 1

Auto Re-injection	Peaks	% Area	Area	% Height	Height (mV)	Ret. Time (min)	Insert sample immediately after its parent	
TRUE		0	0	0	> 100	0	FALSE	FALSE

2/25/2008 9:20:19AM TRILUTECH LC Software Page 1 of 2

	Method Name	Sample Name	Amount	Sample Description	Sample Type	(Analysis) Peak Name	Actual Amount (mg)	Nominal Amount (mg)	Sample Re-injection	Notes
3	Test 1 Shutdown Method (1)	Shutdown	0		UNKNOWN				FALSE	FALSE

Fraction Re-injection Criteria

Method Executed: Version:

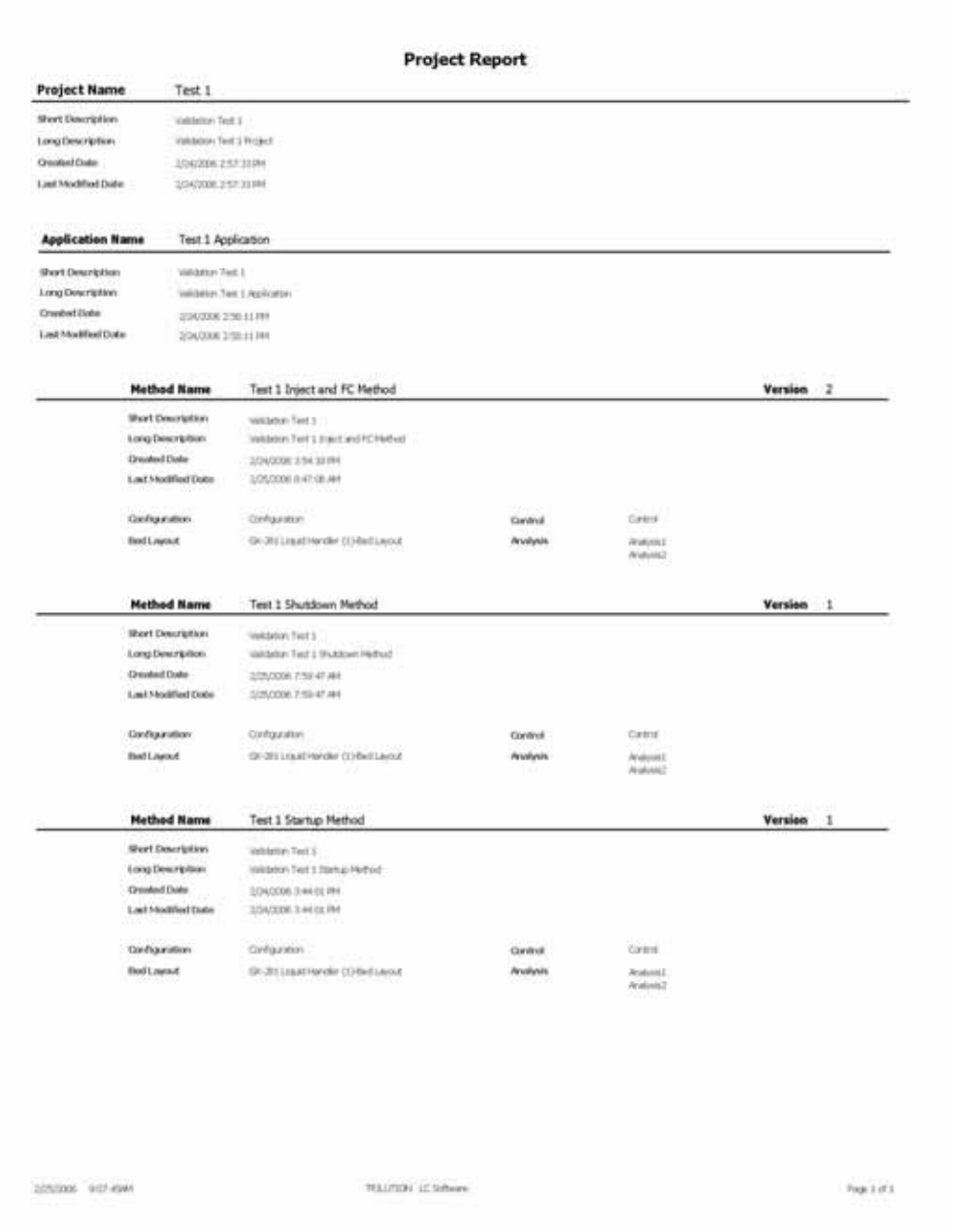
Auto Re-injection	Area of Fraction greater than	Height of peak greater than	Insert fractions immediately after its parent	Insert fractions after all parent samples	Apply Criteria to Re-injected Fractions
FALSE	0	0	FALSE	TRUE	FALSE

Minimum Fraction Sites Criteria

Minimum Fraction Sites required for each step: 0

Project Report

This report comprises three parts: a brief summation of the project information (name, description, modified date, and created date), a brief summation of the application information for each application in the project (name, description, modified date, and created date), and a brief summation of the method information for each method in each application in the project (name, description, modified date, created date, and names of the configuration, bed layout, control, and analysis). Refer to the example on the following page.



Project Report

Project Name Test 1

Short Description
Long Description
Created Date
Last Modified Date

Application Name Test 1 Application

Short Description
Long Description
Created Date
Last Modified Date

Method Name Test 1 Inject and FC Method **Version** 2

Short Description
Long Description
Created Date
Last Modified Date

Configuration
Bed Layout
Control
Analysis

Method Name Test 1 Shutdown Method **Version** 1

Short Description
Long Description
Created Date
Last Modified Date

Configuration
Bed Layout
Control
Analysis

Method Name Test 1 Startup Method **Version** 1

Short Description
Long Description
Created Date
Last Modified Date

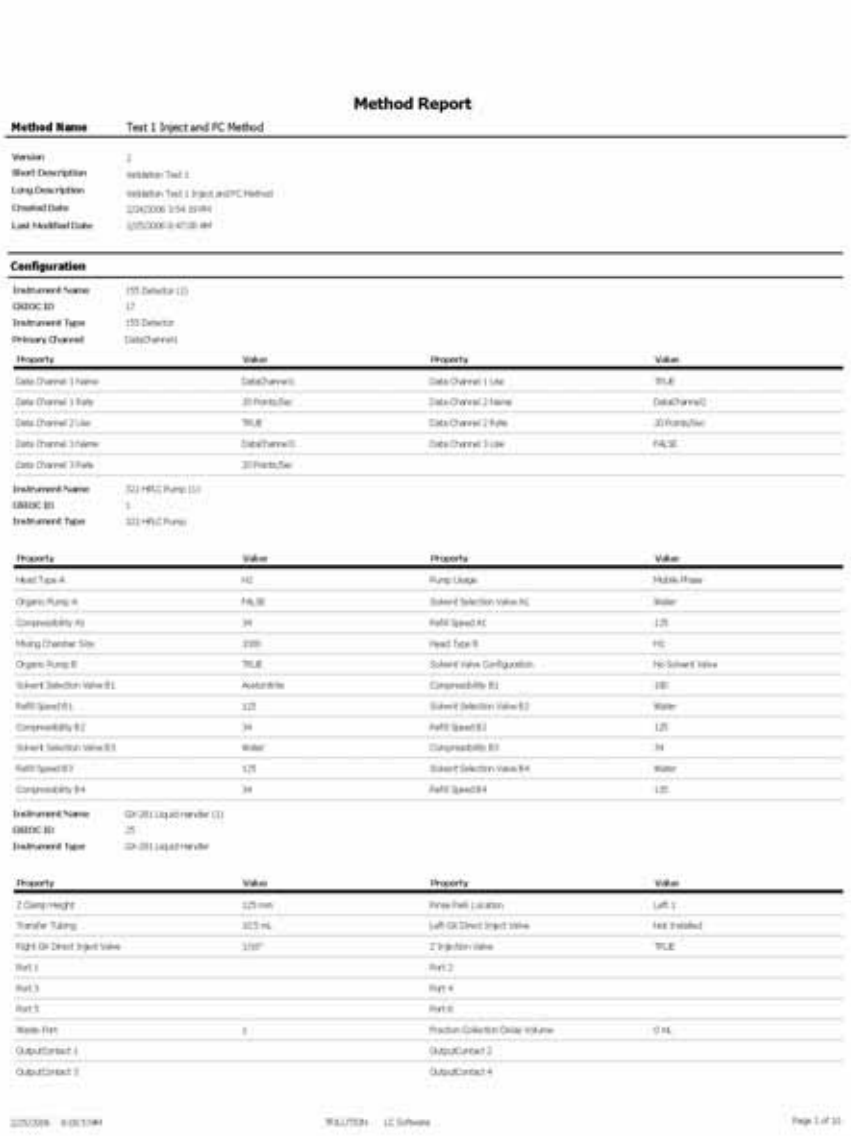
Configuration
Bed Layout
Control
Analysis

Method Report

This report comprises six parts: a brief summation of the method information (name, version, descriptions, modified date, and created date), configuration information, bed layout information (racks used), control information (timed sequential task listing), analysis information (timed integration task listing), and report information (options used in the Analysis and Calibration reports).

Optionally, a company logo and address can be added to this report.

Refer to the example on the following page.



Method Report

Method Name Test 1 Inject and PC Method

Configuration

Property	Value	Property	Value
Data Channel 1 Name	DataChannel1	Data Channel 1 Use	TRUE
Data Channel 1 Rate	20 Points/Sec	Data Channel 2 Name	DataChannel2
Data Channel 2 Use	TRUE	Data Channel 2 Rate	20 Points/Sec
Data Channel 3 Name	DataChannel3	Data Channel 3 Use	FALSE
Data Channel 3 Rate	20 Points/Sec		

Property	Value	Property	Value
Head Type A	H2	Pump Usage	Mobile Phase
Organic Pump A	FALSE	Solvent Selection Valve A1	Water
Compressibility A1	34	Refill Speed A1	125
Mixing Chamber Size	1000	Head Type B	H1
Organic Pump B	TRUE	Solvent Valve Configuration	No Solvent Valve
Solvent Selection Valve B1	Acetonitrile	Compressibility B1	100
Refill Speed B1	125	Solvent Selection Valve B2	Water
Compressibility B2	34	Refill Speed B2	125
Solvent Selection Valve B3	Water	Compressibility B3	34
Refill Speed B3	125	Solvent Selection Valve B4	Water
Compressibility B4	34	Refill Speed B4	125

Property	Value	Property	Value
Z Clamp Height	125 mm	Rinse Path Location	Left 1
Transfer Tubing	10.5 mL	Left Gli Direct Inject Valve	Not Installed
Right Gli Direct Inject Valve	150°	Z Injection Valve	TRUE
Port 1		Port 2	
Port 3		Port 4	
Port 5		Port 6	
Waste Port	1	Fraction Collection Delay Volume	0 mL
OutputContact 1		OutputContact 2	
OutputContact 3		OutputContact 4	

OutputContact 1, On Error	No Change	OutputContact 2, On Error	No Change
OutputContact 3, On Error	No Change	OutputContact 4, On Error	No Change
24V OutputContact 1		24V OutputContact 2	
24V OutputContact 3		24V OutputContact 4	
24V OutputContact 1, On Error	Open	24V OutputContact 2, On Error	Open
24V OutputContact 3, On Error	Open	24V OutputContact 4, On Error	Open
InputContact A		InputContact B	
InputContact C		InputContact D	

Bed Layout

Instrument Name GX-271 Liquid Handler (1)
Bed Layout Name GX-271 Liquid Handler (1) Bed Layout
Template GX-271
Racks 2mL/5mm Station GX-271 Short
5mm Station GX-271 Short
Code 200
Code 210

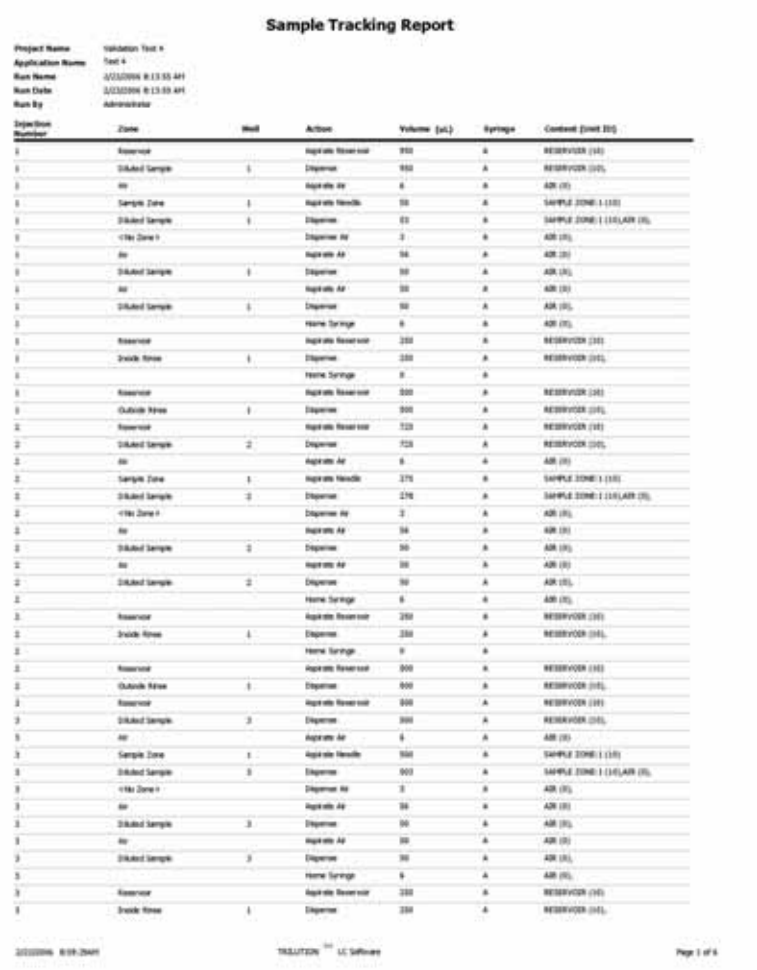
Control

Tasks

Time (min)	Name	Value
0 - 6.451	Gradient Task	
	Flow Rate	30 (mL/min)
	322-HPLC PUMP (1) B (Acetonitrile)	10 %
	322-HPLC PUMP (1) A (Water)	90 %
0	355 350 Detector Settings	
	Detector	355 Detector (1)
	Mode	DUAL
	Sensitivity 1	10
	Sensitivity 2	10
	Sensitivity 3	0
	Wavelength 1	254
	Wavelength 2	270
	Scan Start Wavelength	190
	Scan End Wavelength	700
	Peak Width	4.0
0.03	Detector Autozero Channel	
	Detector	355 Detector (1)
0.05	Fraction Collection Settings	
	Peak Slope Or Level	LEVEL
	Front Slope	10
	Back Slope	10
	Collect Positive Peak	TRUE
	Collect Negative Peak	FALSE
	Collect Apex Peak	FALSE
	Collected Peaks	FALSE
	Collection Region	ALL
	Peak Level	1

Sample Tracking Report

This report comprises a brief summation of the application run information (project name, application name, run name, run date, run by) and the aspirate and dispense actions for each sample and fraction.



Sample Tracking Report

Project Name	Validation Test 4
Application Name	Test 4
Run Name	2/22/2006 8:13:55 AM
Run Date	2/22/2006 8:13:55 AM
Run By	Administrator

Injection Number	Zone	Well	Action	Volume (uL)	Syringe	Content (Unit ID)
1	Reservoir		Aspirate Reservoir	950	A	RESERVOIR (16)
1	Diluted Sample	1	Dispense	950	A	RESERVOIR (10),
1	Air		Aspirate Air	6	A	AIR (0)
1	Sample Zone	1	Aspirate Needle	50	A	SAMPLE ZONE:1 (10)
1	Diluted Sample	1	Dispense	61	A	SAMPLE ZONE:1 (10),AIR (0),
1	<No Zone>		Dispense Air	3	A	AIR (0),
1	Air		Aspirate Air	94	A	AIR (0)
1	Diluted Sample	1	Dispense	50	A	AIR (0),
1	Air		Aspirate Air	50	A	AIR (0)
1	Diluted Sample	1	Dispense	50	A	AIR (0),
1			Home Syringe	6	A	AIR (0),
1	Reservoir		Aspirate Reservoir	250	A	RESERVOIR (16)
1	Inside Rinse	1	Dispense	250	A	RESERVOIR (10),
1			Home Syringe	0	A	
1	Reservoir		Aspirate Reservoir	800	A	RESERVOIR (16)
1	Outside Rinse	1	Dispense	800	A	RESERVOIR (10),
2	Reservoir		Aspirate Reservoir	720	A	RESERVOIR (16)
2	Diluted Sample	2	Dispense	720	A	RESERVOIR (10),
2	Air		Aspirate Air	6	A	AIR (0)
2	Sample Zone	1	Aspirate Needle	270	A	SAMPLE ZONE:1 (10)
2	Diluted Sample	2	Dispense	270	A	SAMPLE ZONE:1 (10),AIR (0),
2	<No Zone>		Dispense Air	3	A	AIR (0),
2	Air		Aspirate Air	94	A	AIR (0)
2	Diluted Sample	2	Dispense	50	A	AIR (0),
2	Air		Aspirate Air	50	A	AIR (0)
2	Diluted Sample	2	Dispense	50	A	AIR (0),
2			Home Syringe	6	A	AIR (0),
2	Reservoir		Aspirate Reservoir	250	A	RESERVOIR (16)
2	Inside Rinse	1	Dispense	250	A	RESERVOIR (10),
2			Home Syringe	0	A	
2	Reservoir		Aspirate Reservoir	800	A	RESERVOIR (16)
2	Outside Rinse	1	Dispense	800	A	RESERVOIR (10),
3	Reservoir		Aspirate Reservoir	800	A	RESERVOIR (16)
3	Diluted Sample	3	Dispense	800	A	RESERVOIR (10),
3	Air		Aspirate Air	6	A	AIR (0)
3	Sample Zone	1	Aspirate Needle	560	A	SAMPLE ZONE:1 (10)
3	Diluted Sample	3	Dispense	900	A	SAMPLE ZONE:1 (10),AIR (0),
3	<No Zone>		Dispense Air	3	A	AIR (0),
3	Air		Aspirate Air	94	A	AIR (0)
3	Diluted Sample	3	Dispense	50	A	AIR (0),
3	Air		Aspirate Air	50	A	AIR (0)
3	Diluted Sample	3	Dispense	50	A	AIR (0),
3			Home Syringe	6	A	AIR (0),
3	Reservoir		Aspirate Reservoir	250	A	RESERVOIR (16)
3	Inside Rinse	1	Dispense	250	A	RESERVOIR (10),

2/22/2006 8:59:29AM TRILUTION™ LC Software Page 1 of 4

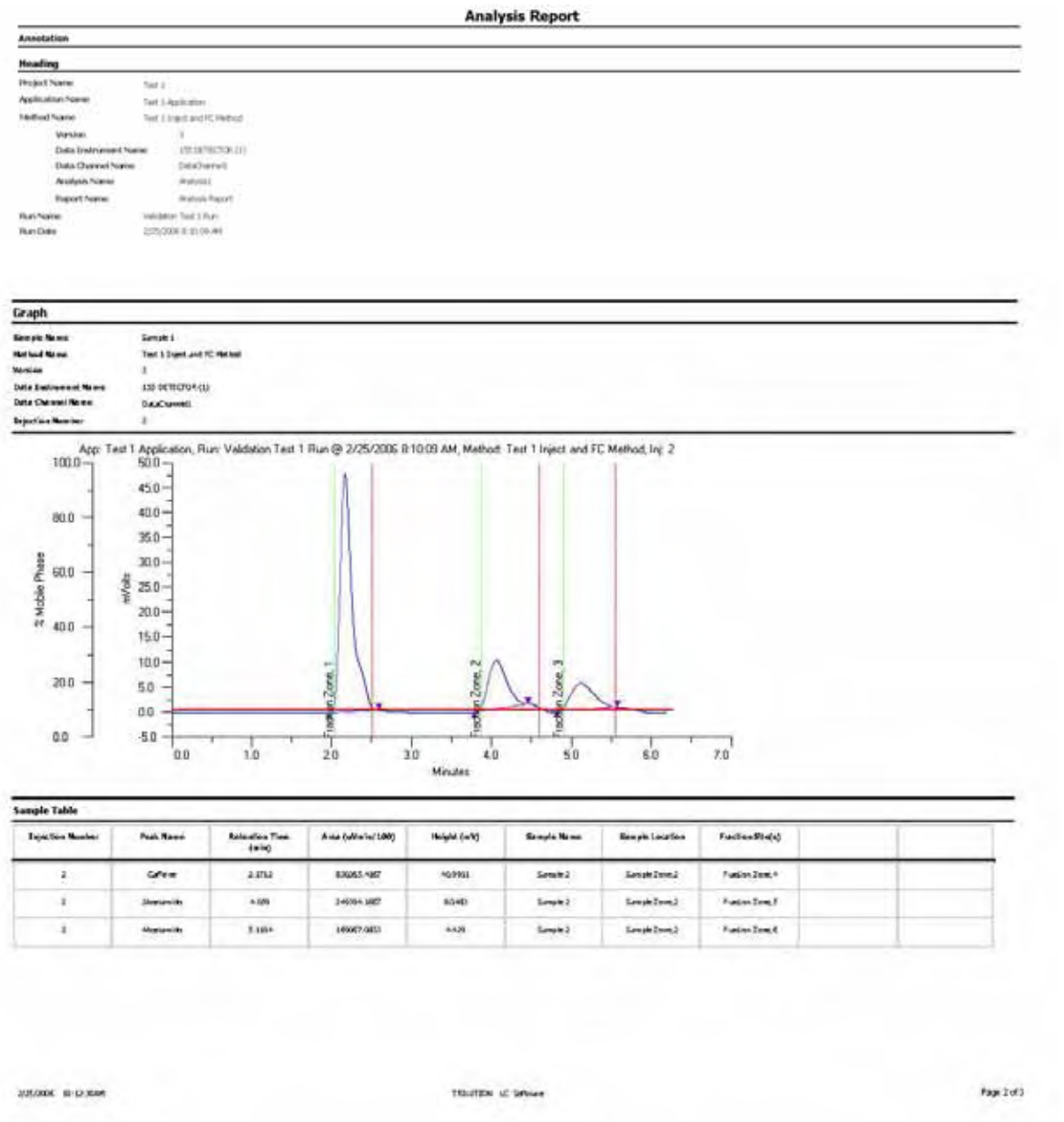
Analysis Report

This report comprises four parts: Annotation (includes optionally a heading, listing of the analysis tasks, listing of the control tasks, details about the data channel settings, the peak table, a listing of the control error conditions, and a listing of the analysis error conditions), Graph (chromatogram), Sample Table (user-specified column contents, may include custom calculations), and Run Variables (a listing of values for all variables used in the application run). Each part is optional and can be omitted by clearing its check box on the Method Builder|Analysis|Report tab.

The analysis report can be generated and viewed for an individual sample or for a range of samples.

Optionally, a company logo and address can be added to this report.

Refer to the example on the following page.



Analysis Report

Annotation

Heading

Graph

App: Test 1 Application, Run: Validation Test 1 Run @ 2/25/2005 8:10:09 AM, Method: Test 1 Inject and FC Method, Inj: 2

% Mobile Phase

mVolts

Minutes

Sample Table

Summary Report

This report comprises five parts: a brief summation of the run and selected data channel (project name, application name, method name, method version, data instrument name, data channel name, analysis name, report name, run name, and run date), timed integration task listing (Analysis Tasks), details about the data channel settings (Data Channel Settings), a listing of values for all variables used in the application run (Method Variables), the Peak Table, and a Summary Table.

The Summary Report can be generated and viewed as an Unknown Summary Report or a Standard Summary Report.

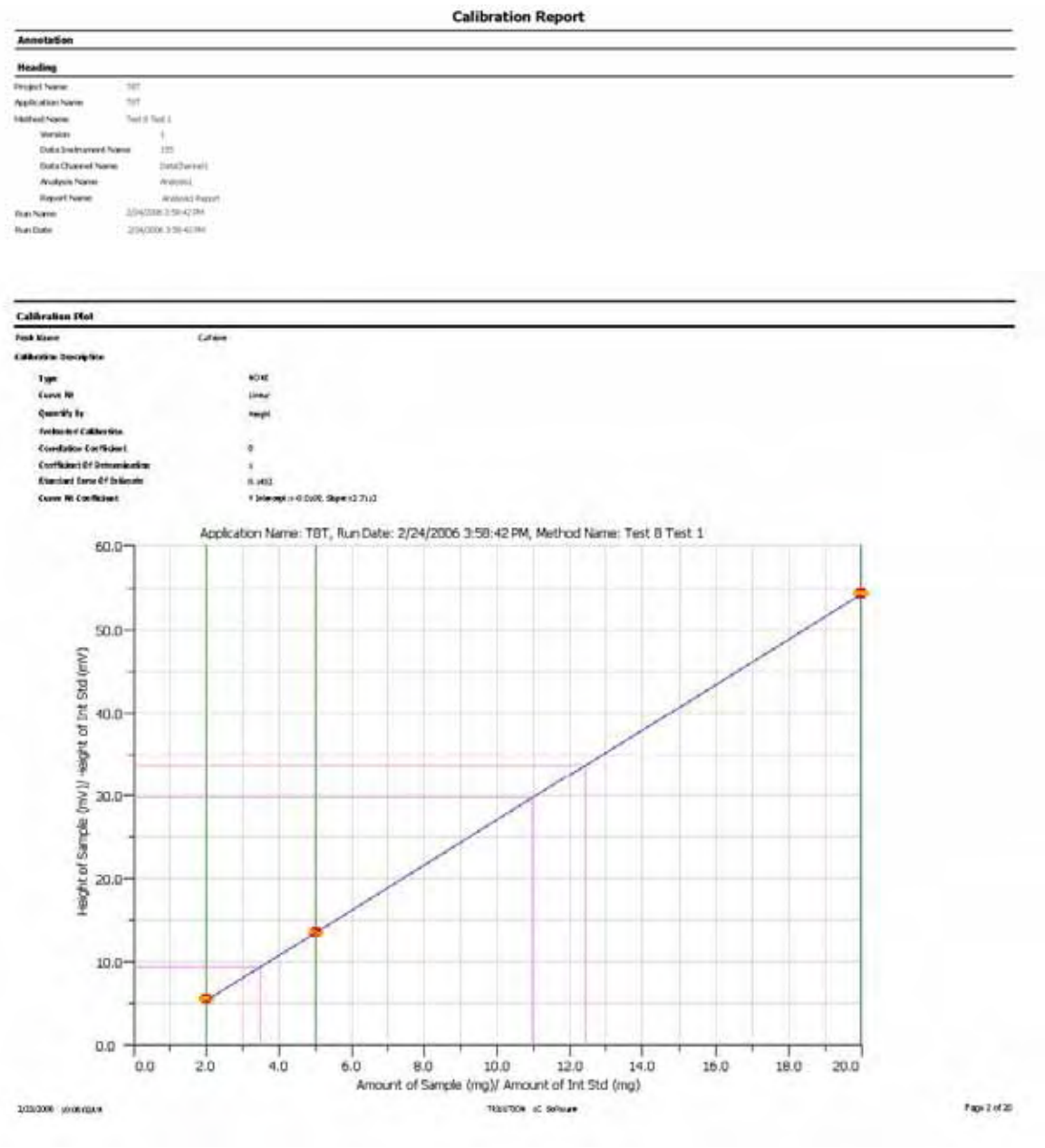
Unknown Summary Report
Analysis Tasks
Data Channel Settings
Run Variables
Peak Table
Summary Table

Calibration Report

This report comprises seven parts: Annotation (includes optionally a heading, listing of the analysis tasks, listing of the control tasks, details about the data channel settings, the peak table, a listing of the control error conditions, and a listing of the analysis error conditions), Graph (chromatogram), Sample Table (user-specified column contents, may include custom calculations), and Run Variables (a listing of values for all variables used in the application run), Calibration Plot (the calibration curve data generated by the standards), and Calibration Plot Table (user-specified column contents for standards and controls, may include custom calculations).

The Calibration Report can be generated and viewed for each peak.

Optionally, a company logo and address can be added to this report.


Calibration Report
Annotation
Heading
Calibration Plot
Application Name: TBT, Run Date: 2/24/2006 3:58:42 PM, Method Name: Test 8 Test 1
Height of Sample (mV) / Height of Int Std (mV)
Amount of Sample (mg) / Amount of Int Std (mg)
0.0
10.0
20.0
30.0
40.0
50.0
60.0
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
20.0

View a Report

In the Reports window, select the button that corresponds to the report to be viewed.

Select the parameters for the report from the drop-down menu(s).

Viewing Toolbar

The toolbar provides quick access to the viewing features of the Reports window.

The Export button exports the report to a file type.

The Print button prints the report.

The Refresh button refreshes the report.

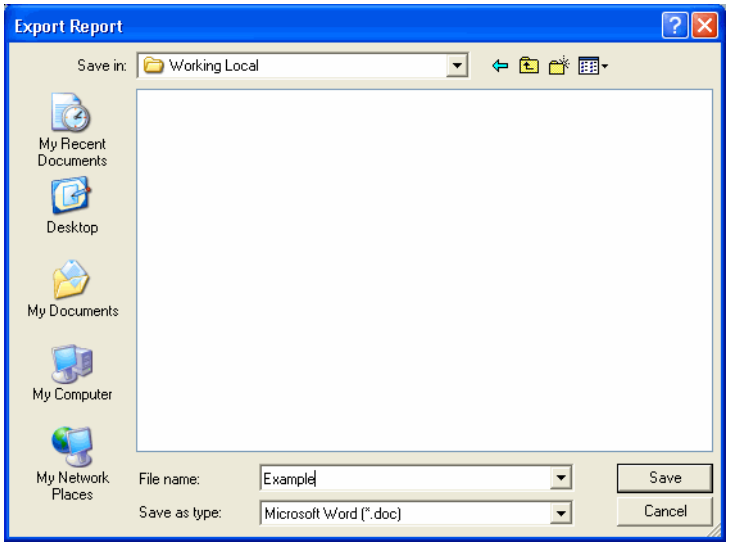
The Page buttons allow the user to move between the pages of the report

The Go To Page option allows the user to select a specific page in the report to view.

The Zoom option allows the user to zoom in on or out on the report.

Export a Report

1 On the Reports window, click the Export ( ) button. The Export Report window is displayed.



The Export Report window

2 Select a destination folder so that it appears in the Save in box.

3 Type a file name into the File name box.

4 Select the file type from the Save as type box, by clicking on the down arrow and then selecting the format.

5 Click **SAVE** to save the document. A message box will indicate when the export has completed.

List of Tasks

A

The Tasks palette lists the pre-defined Tasks with properties. These Tasks are read-only. Few properties are common to all the Tasks.

List of Tasks

Instrument Name	*For List of Tasks:*
151 and 152 Detector Tasks	See page A-4.
155 and 156 Detector Tasks	See page A-16.
202C Fraction Collector Tasks	See page A-22.
FC 203B, FC 204, 206, and prepFC Fraction Collectors Tasks	See page A-24.
819 Injection Module Tasks	See page A-46.
845Z Injection Module Tasks	See page A-72.
215 Liquid Handler and 215 Liquid Handler without Pump Tasks	See page A-93.
231/232 XL Sample Injectors Tasks	See page A-176.
233 XL Sample Injector Tasks	See page A-203.
234 Autoinjector Tasks	See page A-216.
235 Autoinjector Tasks	See page A-236.
GX-281 Liquid Handler Tasks	See page A-272.
305 and 307 Pump Tasks	See page A-455.
306 Pump Tasks	See page A-456.
321 HPLC Pump Tasks	See page A-457.
322 HPLC Pump Tasks	See page A-459.
331/333 Prep-Scale HPLC Pump Tasks	See page A-460.
332/334 Prep-Scale HPLC Pump Tasks	See page A-461.
VALVEMATE™ Tasks	See page A-462.

Instrument Name (Continued)	*For List of Tasks:*
402 Pump Single and 402 Pump Dual Tasks	See page A-464.
506C System Interface Tasks	See page A-465.
Auxiliary Tasks	See page A-468.

151 and 152 Detector Tasks

The table below lists the tasks for the 151 and 152 UV/VIS Detectors.

151 and 152 Detector Tasks

Gilson Task Name and Description	*For detailed information:*
151 152 Detector Settings This Task sets the Peak Width, Wavelength, and Sensitivities for the 151 or 152 UV/VIS Detector.	See page A-6.
Detector Autozero Channel This Task sets the output trace of each channel on Detector to zero.	See page A-7.
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Set Detector Mode This Task sets the detection mode on a 155 or 156 UV/VIS Detector.	See page A-8.
Set Peak Width This Task sets the Peak Width and Mode on the selected Detector.	See page A-9.
Set Sensitivity Sets the sensitivities for monitoring a sample on a separate output channels on the selected Detector.	See page A-10.
151 and 152 Detector Tasks Table *(Page 1 of 2)*	

151 and 152 Detector Tasks (Continued)

Gilson Task Name and Description	*For detailed information:*
Set Wavelength Sets the wavelengths to be monitored based on the Mode selected for the selected Detector.	See page A-11.
Start Data Collection This Task tells TRILUTION LC to begin collecting data. This Task has no properties to set. It is identified by the following image when added to the Control in the Method ( ).	See page A-12.
Stop Data Collection This Task tells TRILUTION LC to stop collecting data. This Task has no properties to set. It is identified by the following image when added to the Control in the Method ( ).	See page A-13.
Turn Lamp Off This Task turns off power to the lamps while maintaining power to the Detector.	See page A-14.
Turn Lamp On Turns the UV and visible lamps on for the specified Detector.	See page A-15.
Write to Display This Task displays a message in the front panel display of the selected instrument. **Note:** Write to Display is only available for the 151 Detector as the 152 Detector does not have a front panel display.	See page A-175.
151 and 152 Detector Tasks Table *(Page 2 of 2)*	

151 152 Detector Settings

This Task sets the Peak Width, Wavelength, and Sensitivities for the 151 or 152 UV/VIS Detector.

Properties

151 152 Detector Settings Properties

Property Name	*Description*	*Default Value*
Detector	The detector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Peak Width	The detector must know the width of the narrowest peak in your run. The detector uses this information to optimize the presentation of peaks and to minimize baseline noise. To set the peak width accurately, run a chromatogram using the minimum peak width setting. Measure the width at half height of the narrowest peak. Valid range is 0 and 4–99 seconds.	4
Sensitivity 1	One of two sensitivities for monitoring a sample on a separate output channels. Valid range is 0.001 to 2.0 AUFS.	0
Sensitivity 2	One of two sensitivities for monitoring a sample on a separate output channels. Valid range is 0.001 to 2.0 AUFS.	0
Wavelength	The monitor wavelength. Valid range is 190–700 nm.	0 nm

151 152 Detector Settings Properties

Detector Autozero Channel

This Task sets the output trace of each channel on Detector to zero.

Properties

Detector Autozero Channel Properties

Property Name	*Description*	*Default Value*
Detector	The detector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	

Detector Autozero Channel Properties

Set Detector Mode

This Task sets the detection mode on a 155 or 156 UV/VIS Detector.

Properties

Set Detector Mode Properties

Property Name	*Description*	*Default Value*
Detector	The detector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Mode	Select from DUAL, SCAN, or SINGLE.	DUAL

Set Detector Mode Properties

Set Peak Width

This Task sets the Peak Width and Mode on the selected Detector.

Properties

Set Peak Width Properties

Property Name	*Description*	*Default Value*
Detector	The detector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Mode	Select from DUAL, SCAN, or SINGLE.	DUAL
Peak Width	The detector must know the width of the narrowest peak in your run. The detector uses this information to optimize the presentation of peaks and to minimize baseline noise. To set the peak width accurately, run a chromatogram using the minimum peak width setting. Measure the width at half height of the narrowest peak. Valid range is 0 and 4–99 seconds for SINGLE or SCAN mode or 4–99 for DUAL mode.	4.0

Set Peak Width Properties

Set Sensitivity

Sets the sensitivities for monitoring a sample on a separate output channels on the selected Detector.

Properties

Set Sensitivity Task Properties

Property Name	*Description*	*Default Value*
Detector	The detector, selected from a drop-down list of instruments in the associated Configuration, that the Task will affect.	
Mode	Select from DUAL, SCAN, or SINGLE.	DUAL
Sensitivity 1	One of two sensitivities for monitoring a sample on a separate output channels. Valid range is 0.001 to 2.0 AUFS.	0.1
Sensitivity 2	One of two sensitivities for monitoring a sample on a separate output channels. Valid range is 0.001 to 2.0 AUFS.	0.1
Sensitivity 3	Only used when SCAN mode is selected; the sensitivity for monitoring output channel 3. Valid range is 0.001–2.000 AUFS	0.1

Set Sensitivity Task Properties

Set Wavelength

Sets the wavelengths to be monitored based on the Mode selected for the selected Detector.

Properties

Set Wavelength Task Properties

Property Name	*Description*	*Default Value*
Detector	The detector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Mode	Select from DUAL, SCAN, or SINGLE.	DUAL
Wavelength 1	The monitor wavelength when DUAL or SINGLE mode is selected. Valid range is 190–700 nm.	0 nm
Wavelength 2	The monitor wavelength for output channel 2 when DUAL mode is selected. Valid range is 190–700 nm.	0 nm
Scan Start Wavelength	Only used when SCAN mode is selected; the first wavelength in the range that will be scanned. Valid range is 190–700 nm.	190 nm
Scan End Wavelength	Only used when SCAN mode is selected; the last wavelength in the range that will be scanned. Valid range is 190–700 nm.	700 nm

Set Wavelength Task Properties

Start Data Collection

This Task tells TRILUTION LC to begin collecting data. This Task has no properties to set. It is identified by the following image when added to the Control in the Method ( ).

Stop Data Collection

This Task tells TRILUTION LC to stop collecting data. This Task has no properties to set. It is identified by the following image when added to the Control in the Method ( ).

Turn Lamp Off

This Task turns off power to the lamps while maintaining power to the Detector.

Properties

Turn Lamp Off Task Properties

Property Name	*Description*	*Default Value*
Detector	The detector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	

Turn Lamp Off Task Properties

Turn Lamp On

Turns the UV and visible lamps on for the specified Detector.

Properties

Turn Lamp On Task Properties

Property Name	*Description*	*Default Value*
Detector	The detector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	

Turn Lamp On Task Properties

155 and 156 Detector Tasks

The table below lists the tasks for the 155 and 156 UV/VIS Detectors.

155 and 156 Detector Tasks

Gilson Task Name and Description	*For detailed information:*
155 156 Detector Settings This Task sets the mode, peak width, sensitivities, and wavelengths for the 155 or 156 UV/VIS Detector.	See page A-19.
155 156 Scan Initiation This Task sets the Detector for an automatic scan.	See page A-21.
Detector Autozero Channel This Task sets the output trace of each channel on Detector to zero.	See page A-7.
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Set Detector Mode This Task sets the detection mode on a 155 or 156 UV/VIS Detector.	See page A-8.
Set Peak Width This Task sets the Peak Width and Mode on the selected Detector.	See page A-9.
155 and 156 Detector Tasks Table *(Page 1 of 3)*	

155 and 156 Detector Tasks (Continued)

Set Sensitivity Sets the sensitivities for monitoring a sample on a separate output channels on the selected Detector.	See page A-10.
Set Wavelength Sets the wavelengths to be monitored based on the Mode selected for the selected Detector.	See page A-11.
Start Data Collection This Task tells TRILUTION LC to begin collecting data. This Task has no properties to set. It is identified by the following image when added to the Control in the Method ( ).	See page A-12.
Stop Data Collection This Task tells TRILUTION LC to stop collecting data. This Task has no properties to set. It is identified by the following image when added to the Control in the Method ( ).	See page A-13.
Turn Lamp Off This Task turns off power to the lamps while maintaining power to the Detector.	See page A-14.
155 and 156 Detector Tasks Table *(Page 2 of 3)*	

155 and 156 Detector Tasks (Continued)

Turn Lamp On Turns the UV and visible lamps on for the specified Detector.	See page A-15.
Write to Display This Task displays a message in the front panel display of the selected instrument. **Note:** Write to Display is only available for the 155 Detector as the 156 Detector does not have a front panel display	See page A-175.
155 and 156 Detector Tasks Table *(Page 3 of 3)*	

155 156 Detector Settings

This Task sets the mode, peak width, sensitivities, and wavelengths for the 155 or 156 UV/VIS Detector.

Properties

155 156 Detector Settings Properties

Property Name	*Description*	*Default Value*
Detector	The detector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Detector Mode	Select from DUAL, SCAN, or SINGLE.	DUAL
Peak Width	The detector must know the width of the narrowest peak in your run. The detector uses this information to optimize the presentation of peaks and to minimize baseline noise. To set the peak width accurately, run a chromatogram using the minimum peak width setting. Measure the width at half height of the narrowest peak. Valid range is 0 and 4–99 seconds for SINGLE or SCAN mode or 4–99 for DUAL mode.	4.0
Single/Dual Sensitivity 1	One of two sensitivities for monitoring a sample on a separate output channels. Valid range is 0.001 to 2.0 AUFS.	0
Single/Dual Sensitivity 2	One of two sensitivities for monitoring a sample on a separate output channels. Valid range is 0.001 to 2.0 AUFS.	0

155 and 156 Detector Tasks Table *(Page 1 of 2)*

155 156 Detector Settings Properties

Property Name	*Description*	*Default Value*
Scan Sensitivity	Only used when SCAN mode is selected; the sensitivity for monitoring output channel 3. Valid range is 0.001–2.000 AUFS	0
Single/Dual/Scan Wavelength 1	The monitor wavelength when DUAL or SINGLE mode is selected. Valid range is 190–700 nm.	0 nm
Dual Wavelength 2	The monitor wavelength for output channel 2 when DUAL mode is selected. Valid range is 190–700 nm.	0 nm
Scan Start Wavelength	Only used when SCAN mode is selected; the first wavelength in the range that will be scanned. Valid range is 190–700 nm.	190 nm
Scan End Wavelength	Only used when SCAN mode is selected; the last wavelength in the range that will be scanned. Valid range is 190–700 nm.	700 nm

155 and 156 Detector Tasks Table ***(Page 2 of 2)***

155 156 Scan Initiation

This Task sets the Detector for an automatic scan.

Properties

155 156 Scan Initiation Task Properties

Property Name	*Description*	*Default Value*
Detector	The detector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Automatic Scan Initiation	When automatic scan initiation is ON, the scan is not performed until the absorbance reading reaches the Initiation Threshold.	ON
Initiation Threshold	The absorbance reading to trigger the Automatic Scan Initiation.	1

155 156 Scan Initiation Task Properties

202C Fraction Collector Tasks

The table below lists the tasks for the 202C Fraction Collector.

202C Fraction Collector Tasks

Gilson Task Name and Description	*For detailed information:*
Fraction Collection Settings This Task sets all parameters for fraction collection.	See page A-27.
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Home Fraction Collector This Task homes the specified Fraction Collector.	See page A-33.
Set Fraction Site This Task identifies where fraction collection will begin for an injected sample.	See page A-34.
Set Multiple Bed Collection This Task is used to set the fraction site when multiple fraction collectors are being used.	See page A-35.
Set Non Peak Per Tube This Task sets parameters for collecting non-peaks.	See page A-37.
Set Peak Level This Task sets the parameters for fraction collection by level.	See page A-38.
202C Fraction Collector Tasks Table *(Page 1 of 2)*	

202C Fraction Collector Tasks (Continued)

Set Peak Per Tube This Task sets parameters for collecting peaks.	See page A-39.
Set Peak Slope This Task sets the parameters for fraction collection by slope.	See page A-40.
Start Fraction Collection This Task tells Trilution LC to begin collecting fractions. This Task has no properties to set.	See page A-43.
Stop Fraction Collection This Task tells Trilution LC to stop collecting fractions. This Task has no properties to set.	See page A-44.
202C Fraction Collector Tasks Table *(Page 2 of 2)*	

FC 203B, FC 204, 206, and PREPFC Fraction Collectors Tasks

The table below lists the tasks for the FC 203B, FC 204, 206, and PREPFC Fraction Collectors.

FC 203B, FC 204, 206, and prepFC Fraction Collectors Tasks

Gilson Task Name and Description	*For detailed information:*
Contact Open-Close This Task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.	See page A-467.
Fraction Collection Settings This Task sets all parameters for fraction collection.	See page A-27.
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Home Fraction Collector This Task homes the specified Fraction Collector.	See page A-33.
Set Fraction Site This Task identifies where fraction collection will begin for an injected sample.	See page A-34.
Set Multiple Bed Collection This Task is used to set the fraction site when multiple fraction collectors are being used.	See page A-35.

FC 203B, FC 204, 206, and prepFC Fraction Collectors Tasks Table *(Page 1 of 2)*

FC 203B, FC 204, 206, and prepFC Fraction Collectors Tasks (Continued)

Set Non Peak Per Tube This Task sets parameters for collecting non-peaks.	See page A-37.
Set Peak Level This Task sets the parameters for fraction collection by level.	See page A-38.
Set Peak Per Tube This Task sets parameters for collecting peaks.	See page A-39.
Set Peak Slope This Task sets the parameters for fraction collection by slope.	See page A-40.
Start Fraction Collection This Task tells Trilution LC to begin collecting fractions. This Task has no properties to set.	See page A-43.
Stop Fraction Collection This Task tells Trilution LC to stop collecting fractions. This Task has no properties to set.	See page A-44.
Wait for Contact This Task initiates a wait in the Method until a contact state change is detected of the specified input contact on the specified Instrument.	See page A-45.
FC 203B, FC 204, 206, and prepFC Fraction Collectors Tasks Table *(Page 2 of 2)*	

Collection and Travel Depth

This Task customizes probe (used as a dispense needle) movement during fraction collection.

Properties

Collection and Travel Depth Task Properties

Property Name	*Description*	*Default Value*
Fraction Collection Depth	The probe height used when dispensing into fraction sites. Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Valid range is Z travel distance and -1 where -1 is equal to the Z Clamp Height.	-1 mm
Fraction Travel Depth	The probe height used when moving between fraction sites. Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Valid range is Z travel distance and -1 where -1 is equal to the Z Clamp Height.	-1 mm

Collection and Travel Depth Task Properties

Fraction Collection Settings

This Task sets all parameters for fraction collection.

Properties

Fraction Collection Settings Task Properties

Property Name	*Description*	*Default Value*
Peak Slope/Level	Select LEVEL, NONE, or SLOPE.	SLOPE
Peak Front Slope	Used only when SLOPE is selected; slope (in degrees) at half height of peak's ascending edge.	15
Front Slope Sensitivity	Used only when SLOPE is selected and Front Sensitivity Auto Calculate is FALSE; sensitivity at half height of the peak's ascending edge. If few or no peaks are integrated, set a lower sensitivity value. If too many peaks are integrated, indicate a higher sensitivity value. For more information on values to enter, see **Peak Slope and Sensitivity** on page 7-14.	15
Front Sensitivity Auto Calculate	Enter TRUE for TRILUTION LC to determine the sensitivity appropriate for the peak front slope and peak width that you've typed. Enter FALSE to type the sensitivity value.	TRUE
Peak Back Slope	Used only when SLOPE is selected; slope (in degrees) at half height of peak's descending edge.	15

Fraction Collection Settings Task Properties Table *(Page 1 of 6)*

Fraction Collection Settings Task Properties

Property Name	*Description*	*Default Value*
Back Slope Sensitivity	Used only when SLOPE is selected and Back Sensitivity Auto Calculate is TRUE; sensitivity at half height of the peak's descending edge. This setting maximizes the amount of the peak that is integrated while minimizing the integration of baseline artifacts. If few or no peaks are integrated, set a lower sensitivity value. If too many peaks are integrated, indicate a higher sensitivity value. For more information on values to enter, see **Peak Slope and Sensitivity** on page 7-14.	15
Back Sensitivity Auto Calculate	Enter TRUE for TRILUTION LC to determine the sensitivity appropriate for the peak back slope and peak width that you've typed. Enter FALSE to type the sensitivity value.	
Co-eluted Peaks	Used only when SLOPE is selected; indicate whether co-eluted peaks should be collected (TRUE) or not (FALSE) where a co-eluted peak is characterized by a change in slope not identified as the Peak Front Slope or Peak Back Slope.	FALSE
Collection Region	Used only when SLOPE is selected; indicate whether the front of the slope to the apex (Front APEX), the apex to the tail (APEX Tail) or the entire peak (ALL) should be collected. To collect the entire peak, but advance to the next well at the apex, select APEX.	ALL

Fraction Collection Settings Task Properties Table *(Page 2 of 6)*

Fraction Collection Settings Task Properties

Property Name	*Description*	*Default Value*
Peak Level	Used only when LEVEL is selected; the mV level above which all effluent is collected. This value is especially useful if the detector signal should go off-scale during collection.	0
Collect Positive Peak	Turns on (TRUE) or off (FALSE) collection of positive peaks	TRUE
Collect Negative Peak	Turns on (TRUE) or off (FALSE) collection of negative peaks	FALSE
Collect Non Peak	Indicates if all effluent should be collected into tubes (TRUE) or not (FALSE)	FALSE
Peak Per Tube Time/Volume	Select from NONE, TIME, or VOLUME	NONE
Peak Per Tube Time Per Tube	Used only when TIME is selected; enter the time to dispense at each tube.	0 sec
Peak Per Tube Volume Per Tube	Used only when VOLUME is selected; enter the maximum volume to be collected into each tube.	0 µL
Non Peak Per Tube Time/Volume	Select from NONE, TIME, or VOLUME	NONE
Non Peak Per Tube Time Per Tube	Used only when TIME is selected; enter the time to dispense at each tube when collecting non peaks.	0 sec

Fraction Collection Settings Task Properties Table *(Page 3 of 6)*

Fraction Collection Settings Task Properties

Property Name	*Description*	*Default Value*
Non Peak Per Tube Volume Per Tube	Used only when VOLUME is selected; enter the maximum volume of non peak effluent to be collected into each tube.	0 µL
Fraction Collection Depth	The probe height used when dispensing into fraction sites. Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Valid range is Z travel distance and -1 where -1 is equal to the Z Clamp Height. Only used when a 215 Liquid Handler is functioning as a fraction collector.	-1 mm
Fraction Travel Depth	The probe height used when moving between fraction sites. Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Valid range is Z travel distance and -1 where -1 is equal to the Z Clamp Height. Only used when a 215 Liquid Handler is functioning as a fraction collector.	-1 mm
Fraction Site 1 Fraction Collector 1	The first fraction collector, from a drop-down list of instruments in the Configuration, that the Task will affect.	

Fraction Collection Settings Task Properties Table *(Page 4 of 6)*

Fraction Collection Settings Task Properties

Property Name	*Description*	*Default Value*
Fraction Site 1 Fraction Zone 1	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which fractions are collected on the first fraction collector.	Fraction Zone
Fraction Site 1 Fraction Well 1	Enter the well number in the Fraction Zone in which collection will begin on the first fraction collector. The default of 0 is for continuous collection and fractions will always be collected in the next available tube.	0
Fraction Site 2 Fraction Collector 2	The second fraction collector, from a drop-down list of instruments in the Configuration, that the Task will affect.	
Fraction Site 2 Fraction Zone 2	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which fractions are collected on the second fraction collector.	Fraction Zone
Fraction Site 2 Fraction Well 2	Enter the well number in the Fraction Zone in which collection will begin on the second fraction collector. The default of 0 is for continuous collection and fractions will always be collected in the next available tube.	0
Fraction Site 3 Fraction Collector 3	The third fraction collector, from a drop-down list of instruments in the Configuration, that the Task will affect.	

Fraction Collection Settings Task Properties Table *(Page 5 of 6)*

Fraction Collection Settings Task Properties

Property Name	*Description*	*Default Value*
Fraction Site 3 Fraction Zone 3	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which fractions are collected on the third fraction collector.	Fraction Zone
Fraction Site 3 Fraction Well 3	Enter the well number in the Fraction Zone in which collection will begin on the third fraction collector. The default of 0 is for continuous collection and fractions will always be collected in the next available tube.	0
Fraction Site 4 Fraction Collector 4	The fourth fraction collector, from a drop-down list of instruments in the Configuration, that the Task will affect.	
Fraction Site 4 Fraction Zone 4	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which fractions are collected on the fourth fraction collector.	Fraction Zone
Fraction Site 4 Fraction Well 4	Enter the well number in the Fraction Zone in which collection will begin on the fourth fraction collector. The default of 0 is for continuous collection and fractions will always be collected in the next available tube.	0

Fraction Collection Settings Task Properties Table *(Page 6 of 6)*

Home Fraction Collector

This Task homes the specified Fraction Collector.

Properties

Home Fraction Collector Task Properties

Property Name	*Description*	*Default Value*
Fraction Collector	The fraction collector, from a drop-down list of instruments in the Configuration, that the Task will affect.	

Home Fraction Collector Task Properties

Sequence of Steps

1 Move dispense head and arm travel the farthest X and Y distances.

2 Move to home position at the left rear of the X and Y matrix.

Set Fraction Site

This Task identifies where fraction collection will begin for an injected sample.

Properties

Set Fraction Site Task Properties

Property Name	*Description*	*Default Value*
Fraction Collector	The fraction collector, from a drop-down list of instruments in the Configuration, that the Task will affect.	
Fraction Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which fractions are collected.	Fraction Zone
Fraction Well	Enter the well number in the Fraction Zone in which collection will begin. The default of 0 is for continuous collection and fractions will always be collected in the next available tube.	0

Set Fraction Site Task Properties

Set Multiple Bed Collection

This Task is used to set the fraction site when multiple fraction collectors are being used.

Properties

Set Multiple Bed Collection Task Properties

Property Name	*Description*	*Default Value*
Fraction Site 1 Fraction Collector	The first fraction collector, from a drop-down list of instruments in the Configuration, that the Task will affect.	
Fraction Site 1 Fraction Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which fractions are collected on the first fraction collector.	Fraction Zone
Fraction Site 1 Fraction Well	Enter the well number in the Fraction Zone in which collection will begin on the first fraction collector. The default of 0 is for continuous collection and fractions will always be collected in the next available tube.	0
Fraction Site 2 Fraction Collector	The second fraction collector, from a drop-down list of instruments in the Configuration, that the Task will affect.	
Fraction Site 2 Fraction Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which fractions are collected on the second fraction collector.	Fraction Zone
Fraction Site 2 Fraction Well	Enter the well number in the Fraction Zone in which collection will begin on the second fraction collector. The default of 0 is for continuous collection and fractions will always be collected in the next available tube.	0

Set Multiple Bed Collection Task Properties Table *(Page 1 of 2)*

Set Multiple Bed Collection Task Properties

Property Name	*Description*	*Default Value*
Fraction Site 3 Fraction Collector	The third fraction collector, from a drop-down list of instruments in the Configuration, that the Task will affect.	
Fraction Site 3 Fraction Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which fractions are collected on the third fraction collector.	Fraction Zone
Fraction Site 3 Fraction Well	Enter the well number in the Fraction Zone in which collection will begin on the third fraction collector. The default of 0 is for continuous collection and fractions will always be collected in the next available tube.	0
Fraction Site 4 Fraction Collector	The fourth fraction collector, from a drop-down list of instruments in the Configuration, that the Task will affect.	
Fraction Site 4 Fraction Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which fractions are collected on the fourth fraction collector.	Fraction Zone
Fraction Site 4 Fraction Well	Enter the well number in the Fraction Zone in which collection will begin on the fourth fraction collector. The default of 0 is for continuous collection and fractions will always be collected in the next available tube.	0

Set Multiple Bed Collection Task Properties Table *(Page 2 of 2)*

Set Non Peak Per Tube

This Task sets parameters for collecting non-peaks.

Properties

Set Non Peak Per Tube Task Properties

Property Name	*Description*	*Default Value*
Time/Volume	Select from NONE, TIME, or VOLUME	NONE
Time Per Tube	Used only when TIME is selected; enter the time to dispense at each tube.	0 sec
Volume Per Tube	Used only when VOLUME is selected; enter the maximum volume to be collected into each tube.	0 µL

Set Non Peak Per Tube Task Properties

Set Peak Level

This Task sets the parameters for fraction collection by level.

Properties

Set Peak Level Task Properties

Property Name	*Description*	*Default Value*
Peak Level	Used only when collecting by LEVEL; the mV level above which all effluent is collected. This value is especially useful if the detector signal should go off-scale during collection.	0
Collect Positive Peak	Turns on (TRUE) or off (FALSE) collection of positive peaks	TRUE
Collect Negative Peak	Turns on (TRUE) or off (FALSE) collection of negative peaks	FALSE
Collect Non Peak	Indicates if all effluent should be collected into tubes (TRUE) or not (FALSE)	FALSE

Set Peak Level Task Properties

Set Peak Per Tube

This Task sets parameters for collecting peaks.

Properties

Set Peak Per Tube Task Properties

Property Name	*Description*	*Default Value*
Time/Volume	Select from NONE, TIME, or VOLUME	NONE
Time Per Tube	Used only when TIME is selected; enter the time to dispense at each tube.	0 sec
Volume Per Tube	Used only when VOLUME is selected; enter the maximum volume to be collected into each tube.	0 µL

Set Peak Per Tube Task Properties

Set Peak Slope

This Task sets the parameters for fraction collection by slope.

Properties

Set Peak Slope Task Properties

Property Name	*Description*	*Default Value*
Peak Front Slope	Slope (in degrees) at half height of peak's ascending edge.	15
Front Slope Sensitivity	Used only Front Sensitivity Auto Calculate is FALSE; sensitivity at half height of the peak's ascending edge. If few or no peaks are integrated, set a lower sensitivity value. If too many peaks are integrated, indicate a higher sensitivity value. For more information on values to enter, see **Peak Slope and Sensitivity** on page 7-14.	15
Front Sensitivity Auto Calculate	Enter TRUE for TRILUTION LC to determine the sensitivity appropriate for the peak front slope and peak width that you've typed. Enter FALSE to type the sensitivity value.	TRUE
Peak Back Slope	Slope (in degrees) at half height of peak's descending edge.	15

Set Peak Slope Task Properties Table *(Page 1 of 3)*

Set Peak Slope Task Properties

Property Name	*Description*	*Default Value*
Back Slope Sensitivity	Used only when Back Sensitivity Auto Calculate is FALSE; sensitivity at half height of the peak's descending edge. This setting maximizes the amount of the peak that is integrated while minimizing the integration of baseline artifacts. If few or no peaks are integrated, set a lower sensitivity value. If too many peaks are integrated, indicate a higher sensitivity value. For more information on values to enter, see **Peak Slope and Sensitivity** on page 7-14.	15
Back Sensitivity Auto Calculate	Enter TRUE for TRILUTION LC to determine the sensitivity appropriate for the peak back slope and peak width that you've typed. Enter FALSE to type the sensitivity value.	TRUE
Collect Positive Peak	Turns on (TRUE) or off (FALSE) collection of positive peaks	TRUE
Collect Negative Peak	Turns on (TRUE) or off (FALSE) collection of negative peaks	FALSE
Collect Non Peak	Indicates if all effluent should be collected into tubes (TRUE) or not (FALSE)	FALSE

Set Peak Slope Task Properties Table *(Page 2 of 3)*

Set Peak Slope Task Properties

Property Name	*Description*	*Default Value*
Co-eluted Peaks	Indicate whether co-eluted peaks should be collected (TRUE) or not (FALSE) where a co-eluted peak is characterized by a change in slope not identified as the Peak Front Slope or Peak Back Slope.	FALSE
Collection Region	Indicate whether the front of the slope to the apex (Front APEX), the apex to the tail (APEX Tail) or the entire peak (ALL) should be collected. To collect the entire peak, but advance to the next well at the apex, select APEX.	ALL

Set Peak Slope Task Properties Table *(Page 3 of 3)*

Start Fraction Collection

This Task tells TRILUTION LC to begin collecting fractions. This Task has no properties to set.

Stop Fraction Collection

This Task tells TRILUTION LC to stop collecting fractions. This Task has no properties to set.

Wait for Contact

This Task initiates a wait in the Method until a contact state change is detected of the specified input contact on the specified Instrument.

Properties

Wait for Contact Task Properties

Property Name	*Description*	*Default Value*
Instrument	The instrument, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Contact ID	The input contact being monitored for a state change.	A

Wait for Contact Task Properties

819 Injection Module Tasks

The table below lists tasks for the 819 Injection Module.

819 Injection Module Tasks

Gilson Task Name and Description	*For detailed information:*
215 819 Low Volume Partial Loop Injection This Task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.	See page A-47.
215 819 Partial Loop Injection This Task performs a partial loop injection.	See page A-55.
215 819 Prep Injection with Collection This Task is used when doing injection and fraction collection on the same bed. It performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the low pressure fraction collection valve.	See page A-63.
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Injection Valve Position This Task sets the injection valve position on the Injector to either LOAD or INJECT.	See page A-71.
819 Injection Module Tasks	

215 819 Low Volume Partial Loop Injection

This Task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.

Properties

215 819 Low Volume Partial Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Injector	The injector or injection module, selected from a drop-down list of instruments in the Configuration, that the Task will affect. For this Task, select the 819 Injection Module.	
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1

215 819 Low Volume Partial Loop Injection Task Properties Table *(Page 1 of 5)*

215 819 Low Volume Partial Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Air Gap Volume	The quantity of an air gap.	6 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	10 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	10 µL
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	3 sec

215 819 Low Volume Partial Loop Injection Task Properties Table *(Page 2 of 5)*

215 819 Low Volume Partial Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume and Extra Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm

215 819 Low Volume Partial Loop Injection Task Properties Table *(Page 3 of 5)*

215 819 Low Volume Partial Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Liquid Level Following	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE
Drain Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	300 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume (µL) moves out of the probe and into the injection port.	4 mL/min
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	450 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume (µL) moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

215 819 Low Volume Partial Loop Injection Task Properties Table *(Page 4 of 5)*

215 819 Low Volume Partial Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

215 819 Low Volume Partial Loop Injection Task Properties Table *(Page 5 of 5)*

Sequence of Steps

1 Move Z to top.
2 Set injection valve to INJECT.
3 Move to Drain Well in Drain Zone and lower probe into well.
4 Home dilutor.
5 Move Z to top.

ASPIRATE

1 Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.
2 Switch dilutor valve to reservoir and aspirate Push Volume at Aspirate Flow Rate.
3 Move to Sample Well in Sample Zone.
4 Lower probe into well to Sample Z Option and Sample Z Offset.
5 Switch dilutor valve to probe and aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.
6 Move Z to top.

INJECT

1 Move to Injection Well in Injection Zone.
2 Dispense Extra Volume at Dispense Flow Rate.
3 Switch injection valve to LOAD.
4 Wait 1.2 sec.
5 Dispense Injection Volume + Push Volume at Dispense Flow Rate.

6 Wait Injection Equilibration Time.

7 Synchronize.

8 Switch injection valve to INJECT.

INJECTION PORT RINSE

1 Home dilutor.

2 Switch dilutor valve to reservoir.

3 Aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

4 Switch dilutor valve to probe.

5 Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

6 Repeat steps 2–5 until requested rinse volume is aspirated and dispensed.

7 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

215 819 Partial Loop Injection

This Task performs a partial loop injection.

Properties

215 819 Partial Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Injector	The injector or injection module, selected from a drop-down list of instruments in the Configuration, that the Task will affect. For this Task, select the 819 Injection Module.	
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	6 µL

215 819 Partial Loop Injection Task Properties Table *(Page 1 of 5)*

215 819 Partial Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	10 µL
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	3 sec

215 819 Partial Loop Injection Task Properties Table *(Page 2 of 5)*

215 819 Partial Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume and Extra Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm

215 819 Partial Loop Injection Task Properties Table *(Page 3 of 5)*

215 819 Partial Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Liquid Level Following	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE
Drain Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	300 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	4 mL/min
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	450 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

215 819 Partial Loop Injection Task Properties Table *(Page 4 of 5)*

215 819 Partial Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

215 819 Partial Loop Injection Task Properties Table *(Page 5 of 5)*

Sequence of Steps

1 Move Z to top.

2 Set injection valve to INJECT.

3 Move to Drain Well in Drain Zone and lower probe into well.

4 Home dilutor.

5 Move Z to top.

ASPIRATE

1 Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.

2 Move to Sample Well in Sample Zone.

3 Lower probe into well to Sample Z Option and Sample Z Offset.

4 Switch dilutor valve to probe and aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.

5 Move Z to top.

INJECT

6 Move to Injection Well in Injection Zone.

7 Dispense Extra Volume at Dispense Flow Rate.

8 Switch injection valve to LOAD.

9 Wait 1.2 sec.

10 Dispense Injection Volume at Dispense Flow Rate.

11 Wait Injection Equilibration Time.

12 Synchronize.

13 Switch injection valve to INJECT.

INJECTION PORT RINSE

1 Home dilutor.

2 Switch dilutor valve to reservoir.

3 Aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

4 Switch dilutor valve to probe.

5 Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

6 Repeat steps 2–5 until requested rinse volume is aspirated and dispensed.

7 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

215 819 Prep Injection with Collection

This Task is used when doing injection and fraction collection on the same bed. It performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the low pressure fraction collection valve.

Properties

215 819 Prep Injection with Collection Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Injector	The injector or injection module, selected from a drop-down list of instruments in the Configuration, that the Task will affect. For this Task, select the 819 Injection Module.	
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Injection Volume, and Push Volume are dispensed.	Injection Zone

215 819 Prep Injection with Collection Task Properties Table *(Page 1 of 5)*

215 819 Prep Injection with Collection Task Properties

Property Name	*Description*	*Default Value*
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	6 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	10 µL
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	3 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	3 sec

215 819 Prep Injection with Collection Task Properties Table *(Page 2 of 5)*

215 819 Prep Injection with Collection Task Properties

Property Name	*Description*	*Default Value*
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume and Extra Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2

215 819 Prep Injection with Collection Task Properties Table *(Page 3 of 5)*

215 819 Prep Injection with Collection Task Properties

Property Name	*Description*	*Default Value*
Liquid Level Following	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE
Drain Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	300 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	4 mL/min
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	450 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

215 819 Prep Injection with Collection Task Properties Table *(Page 4 of 5)*

215 819 Prep Injection with Collection Task Properties

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

215 819 Prep Injection with Collection Task Properties Table *(Page 5 of 5)*

Sequence of Steps

1 Move Z to top.
2 Set injection valve to INJECT.
3 Move to Drain Well in Drain Zone and lower probe into well.
4 Switch low pressure fraction collection valve to COLLECT for 2 seconds.
5 Lower probe into drain well.
6 Home dilutor.
7 Move Z to top.

ASPIRATE

1 Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.
2 Switch dilutor valve to reservoir and aspirate Push Volume at Aspirate Flow Rate.
3 Move to Sample Well in Sample Zone.
4 Lower probe into well to Sample Z Option and Sample Z Offset.
5 Switch dilutor valve to probe and aspirate Injection Volume at Aspirate Flow Rate.
6 Move Z to top.

INJECT

1 Move to Injection Well in Injection Zone.
2 Switch injection valve to LOAD.

3 Wait 1.2 sec.
4 Dispense Injection Volume + Push Volume at Dispense Flow Rate.
5 Wait Injection Equilibration Time.
6 Synchronize.
7 Switch injection valve to INJECT.

INJECTION PORT RINSE

1 Home dilutor.
2 Switch dilutor valve to reservoir.
3 Aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
4 Switch dilutor valve to probe.
5 Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
6 Repeat steps 2–5 until requested rinse volume is aspirated and dispensed.
7 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.
2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3 Home dilutor.
4 Switch dilutor valve to reservoir.

5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

Injection Valve Position

This Task sets the injection valve position on the Injector to either LOAD or INJECT.

Properties

Injection Valve Position Task Properties

Property Name	*Description*	*Default Value*
Injector	The injector or injection module, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Injection Valve Position	Select from LOAD or INJECT.	INJECT
Valve ID	Enter 1 to for the GX Z Injection Module. Enter 2 for the Left GX Direct Injection Module. Enter 3 for the Right GX Direct Injection Module.	1

Injection Valve Position Task Properties

845Z Injection Module Tasks

The table below lists tasks for the 845Z Injection Module.

845Z Injection Module Tasks

Gilson Task Name and Description	*For detailed information:*
845Z Prep Injection This Task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop.	See page A-73.
845Z Prep Injection with Collection This Task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop and also rinses the low pressure fraction collection valve.	See page A-83.
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Injection Valve Position This Task sets the injection valve position on the Injector to either LOAD or INJECT.	See page A-71.
845Z Injection Module Tasks	

845Z Prep Injection

This Task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop.

Properties

845Z Prep Injection Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Injector	The injector or injection module, selected from a drop-down list of instruments in the Configuration, that the Task will affect. For this Task, select the 845Z Injection Module.	
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Air Gap Volume	The quantity of an air gap.	20 µL

845Z Prep Injection Task Properties Table *(Page 1 of 7)*

845Z Prep Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Pull Volume	A volume of air used to pull the injection volume into the sample loop.	200 µL **Note:** This default was determined using a 125 mm Z arm and a 0.8 mm ID probe.
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which the Injection Volume and the Pull Volume moves into the probe.	4 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min

845Z Prep Injection Task Properties Table *(Page 2 of 7)*

845Z Prep Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume from the bed.	2 mm

845Z Prep Injection Task Properties Table *(Page 3 of 7)*

845Z Prep Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Liquid Level Following	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE
Inside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	500 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

845Z Prep Injection Task Properties Table *(Page 4 of 7)*

845Z Prep Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Inside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the inside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset.	Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

845Z Prep Injection Task Properties Table *(Page 5 of 7)*

845Z Prep Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

845Z Prep Injection Task Properties Table *(Page 6 of 7)*

845Z Prep Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

845Z Prep Injection Task Properties Table *(Page 7 of 7)*

Sequence of Steps

1 Move Z to top.
2 Move to Inside Rinse Well in Inside Rinse Zone.
3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
4 Home dilutor.
5 Move Z to top.

ASPIRATE

1 Switch injection valve to LOAD.
2 Wait 0.2 min.
3 Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.
4 Move to Sample Well in Sample Zone.
5 Lower probe into well to Sample Z Option and Sample Z Offset.
6 Aspirate Injection Volume at Aspirate Flow Rate.
7 Move Z to top.
8 Aspirate Pull Volume at Aspirate Flow Rate.
9 Wait equilibration time.
10 Synchronize.

INJECT

1 Switch injection valve to INJECT.
2 Move Z to top.

INSIDE RINSE

1 Move to Inside Rinse Well in Inside Rinse Zone.
2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3 Home dilutor.
4 Switch dilutor valve to reservoir.
5 Aspirate Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.
6 Switch dilutor valve to probe.
7 Dispense Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.
8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.
9 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.
2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3 Home dilutor.
4 Switch dilutor valve to reservoir.
5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

845Z Prep Injection with Collection

This Task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop and also rinses the low pressure fraction collection valve.

Properties

845Z Prep Injection with Collection Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Injector	The injector or injection module, selected from a drop-down list of instruments in the Configuration, that the Task will affect. For this Task, select the 845Z Injection Module.	
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Air Gap Volume	The quantity of an air gap.	20 µL

845Z Prep Injection with Collection Task Properties Table *(Page 1 of 7)*

845Z Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Pull Volume	A volume of air used to pull the injection volume into the sample loop.	200 µL **Note:** This default was determined using a 125 mm Z arm and a 0.8 mm ID probe.
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which the Injection Volume and the Pull Volume moves into the probe.	4 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min

845Z Prep Injection with Collection Task Properties Table *(Page 2 of 7)*

845Z Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume from the bed.	2 mm

845Z Prep Injection with Collection Task Properties Table *(Page 3 of 7)*

845Z Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Liquid Level Following	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE
Inside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	500 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

845Z Prep Injection with Collection Task Properties Table *(Page 4 of 7)*

845Z Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Inside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the inside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset.	Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

845Z Prep Injection with Collection Task Properties Table *(Page 5 of 7)*

845Z Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

845Z Prep Injection with Collection Task Properties Table *(Page 6 of 7)*

845Z Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

845Z Prep Injection with Collection Task Properties Table *(Page 7 of 7)*

Sequence of Steps

1 Move Z to top.

2 Move to Inside Rinse Well in Inside Rinse Zone.

3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

4 Home dilutor.

5 Move Z to top.

6 Switch low pressure fraction collection valve to COLLECT for 2 seconds.

7 Switch injection valve to LOAD.

8 Wait 0.2 min.

ASPIRATE

1 Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.

2 Move to Sample Well in Sample Zone.

3 Lower probe into well to Sample Z Option and Sample Z Offset.

4 Aspirate Injection Volume at Aspirate Flow Rate.

5 Move Z to top.

6 Aspirate Pull Volume at Aspirate Flow Rate.

7 Wait equilibration time.

8 Synchronize.

INJECT

1 Switch injection valve to INJECT.
2 Move Z to top.

INSIDE RINSE

1 Move to Inside Rinse Well in Inside Rinse Zone.
2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3 Home dilutor.
4 Switch dilutor valve to reservoir.
5 Aspirate Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.
6 Switch dilutor valve to probe.
7 Dispense Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.
8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.
9 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.
2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3 Home dilutor.
4 Switch dilutor valve to reservoir.

5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

215 Liquid Handler and 215 Liquid Handler without Pump Tasks

The table below lists the tasks for the 215 Liquid Handler and 215 Liquid Handler without Pump.

215 Liquid Handler and 215 Liquid Handler without Pump Tasks

Gilson Task Name and Description	*For detailed information:*
215 819 Low Volume Partial Loop Injection This Task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.	See page A-47.
215 819 Partial Loop Injection This Task performs a partial loop injection.	See page A-55.
215 819 Prep Injection with Collection This Task is used when doing injection and fraction collection on the same bed. It performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the low pressure fraction collection valve.	See page A-63.
845Z Prep Injection This Task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop.	See page A-73.
215 Liquid Handler and 215 Liquid Handler without Pump Tasks Table *(Page 1 of 6)*	

215 Liquid Handler and 215 Liquid Handler without Pump Tasks (Continued)

845Z Prep Injection with Collection This Task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop and also rinses the low pressure fraction collection valve.	See page A-83.
Add Diluent This Task aspirates the specified amount of diluent volume and then dispenses to the Sample Zone.	See page A-107.
Aspirate This Task aspirates an air gap or draws liquid from the bed or aspirates liquid from the reservoir. If drawing liquid from the bed, this Task must be used in conjunction with the Move to Sample Location Task.	See page A-99.
Collection and Travel Depth This Task customizes probe (used as a dispense needle) movement during fraction collection.	See page A-26.
Contact Open-Close This Task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.	See page A-467.
215 Liquid Handler and 215 Liquid Handler without Pump Tasks Table *(Page 2 of 6)*	

215 Liquid Handler and 215 Liquid Handler without Pump Tasks (Continued)

Dilute This Task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. The Task next aspirates sample from the wells of the sample zone and then dispenses again to the result zone. If any extra volume of the diluent is aspirated, it is dispensed with the air gap in the drain. If no extra volume of diluent is aspirated then the air gap is dispensed 1/2 to the drain and 1/2 to result. An optional mix with liquid or air is included in this Task. The inside and outside of the probe is rinsed.	See page A-120.
Dispense This Task delivers liquid or air and must be used in conjunction with the Move to Sample Location Task.	See page A-101.
Fraction Collection Settings This Task sets all parameters for fraction collection.	See page A-27.
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Home Liquid Handler This Task homes the specified liquid handler.	See page A-103.
215 Liquid Handler and 215 Liquid Handler without Pump Tasks Table *(Page 3 of 6)*	

215 Liquid Handler and 215 Liquid Handler without Pump Tasks (Continued)

Injection Rinse This Task is used to rinse the injection port. **Note:** This Task must be used with another task as it does not include any move instructions.	See page A-136.
Inside Rinse This Task moves to the rinse station and then rinses the inside of the probe.	See page A-137.
Mix With Air This Task aspirates air and then dispenses it into a well at a set height. The aspirate and dispense are repeated several times, if required. The inside and outside of the probe is rinsed.	See page A-140.
Mix with Liquid This Task aspirates liquid and then dispenses it into a well at a set height (several times, if required). The inside and outside of the probe is rinsed.	See page A-148.
Move to Sample Location This Task positions the probe in a specified well in a specified zone at a specified height.	See page A-167.
Outside Rinse This Task moves to the rinse station and then rinses the outside of the probe.	See page A-169.
215 Liquid Handler and 215 Liquid Handler without Pump Tasks Table *(Page 4 of 6)*	

215 Liquid Handler and 215 Liquid Handler without Pump Tasks (Continued)

Prime Dilutor This Task primes the dilutor in the specified zone. It aspirates the specified amount of volume from the reservoir (or the syringe capacity) and then dispenses to the specified wells. If the volume specified exceeds the syringe capacity, then multiple aspirates and dispenses will be performed to deliver the requested volume.	See page A-172.
Set Fraction Site This Task identifies where fraction collection will begin for an injected sample.	See page A-34.
Set Multiple Bed Collection This Task is used to set the fraction site when multiple fraction collectors are being used.	See page A-35.
Set Non Peak Per Tube This Task sets parameters for collecting non-peaks.	See page A-37.
Set Peak Level This Task sets the parameters for fraction collection by level.	See page A-38.
Set Peak Per Tube This Task sets parameters for collecting peaks.	See page A-39.
Set Peak Slope This Task sets the parameters for fraction collection by slope.	See page A-40.
Start Fraction Collection This Task tells Trilution LC to begin collecting fractions. This Task has no properties to set.	See page A-43.
215 Liquid Handler and 215 Liquid Handler without Pump Tasks Table *(Page 5 of 6)*	

215 Liquid Handler and 215 Liquid Handler without Pump Tasks (Continued)

Stop Fraction Collection This Task tells Trilution LC to stop collecting fractions. This Task has no properties to set.	See page A-44.
Transfer This Task aspirates the specified amount of sample volume from the wells of the source zone and then dispenses to the wells of the result zone. The inside and outside of the probe is rinsed.	See page A-158.
Voltage On - Off This Task opens and powers off or closes and powers on the 24V contact on a specified liquid handler.	See page A-106.
Wait for Contact This Task initiates a wait in the Method until a contact state change is detected of the specified input contact on the specified Instrument.	See page A-45.
Write to Display This Task displays a message in the front panel display of the selected instrument.	See page A-175.
215 Liquid Handler and 215 Liquid Handler without Pump Tasks Table *(Page 6 of 6)*	

Aspirate

This Task aspirates an air gap or draws liquid from the bed or aspirates liquid from the reservoir. If drawing liquid from the bed, this Task must be used in conjunction with the Move to Sample Location Task.

Properties

Aspirate Task Properties

Property Name	*Brief Description*	*Default Value*
Instrument	The liquid handler, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the associated configuration, that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	
Liquid Level Following	Used only when Valve Position = PROBE is selected; select TRUE and the probe will follow the liquid down as it is aspirated. The Move to Sample Location Task's Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Move to Sample Location's Sample Zone.	FALSE
Aspirate Volume	The quantity of liquid to be aspirated.	0
Aspirate Flow Rate	The speed at which the volume moves into the probe.	0

Aspirate Task Properties Table *(Page 1 of 2)*

Aspirate Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Valve Position	Select from either PROBE or RESERVOIR. Not used for the GX-281 Liquid Handler.	PROBE
Air Gap	Used only when Valve Position = PROBE; the quantity of an air gap.	FALSE

Aspirate Task Properties Table *(Page 2 of 2)*

Dispense

This Task delivers liquid or air and must be used in conjunction with the Move to Sample Location Task.

Properties

Dispense Task Properties

Property Name	*Description*	*Default Value*
Instrument	The liquid handler, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the associated configuration, that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	
Liquid Level Following	Select TRUE and the probe will follow the liquid up as it is dispensed. The Move to Sample Location Task's Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid up as it is dispensed to the Move to Sample Location's Sample Zone.	FALSE
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	1

Dispense Task Properties Table *(Page 1 of 2)*

Dispense Task Properties (Continued)

Property Name	*Description*	*Default Value*
Dispense Volume	The quantity of liquid or air to be dispensed.	0
Dispense Flow Rate	The speed at which the volume moves out of the probe.	0

Dispense Task Properties Table *(Page 2 of 2)*

Home Liquid Handler

This Task homes the specified liquid handler.

Properties

Home Liquid Handler Task Properties

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the associated configuration, that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	
Inside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, at which the Dilutor is homed.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1

Home Liquid Handler Task Properties Table *(Page 1 of 2)*

Home Liquid Handler Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Z Option	One of five defined reference points, selected from a drop-down list, used when performing the move: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Z Offset.	Bottom
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Z Option.	2 mm

Home Liquid Handler Task Properties Table *(Page 2 of 2)*

Sequence of Steps

1 Home the X/Y/Z of the Liquid Handler.

2 Move the probe to Inside Rinse Well in Inside Rinse Zone.

3 Lower probe to Z Option and Z Offset.

4 Home dilutor.

5 Move Z to top.

Voltage On - Off

This Task opens and powers off or closes and powers on the 24V contact on a specified liquid handler.

Properties

Voltage On - Off Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Contact ID	Enter the number that corresponds to the 24V output contact to act on for the liquid handler selected.	1
24V ON/OFF	The action to occur: open and power off (OFF) or close and power on (ON) the Contact ID.	OFF

Voltage On - Off Task Properties

Add Diluent

This Task aspirates the specified amount of diluent volume and then dispenses to the Sample Zone.

Properties

Add Diluent Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Diluent Source	Select PROBE or RESERVOIR.	RESERVOIR
Diluent Zone	Used only if PROBE is selected; the zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Diluent Volume is aspirated.	Sample Zone
Diluent Well	Used only if PROBE is selected; enter the well number in the Diluent Zone.	0
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Diluent Volume is delivered.	
Sample Well	Enter the well number in the Sample Zone.	0
Air Gap Volume	The quantity of an air gap.	6 µL

Add Diluent Task Properties Table *(Page 1 of 10)*

Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Diluent Volume	The quantity of liquid used to dilute the sample volume in the Sample Well in the Sample Zone.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	1.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Aspirate Z Option	Used only when PROBE is selected; one of five defined reference points, selected from a drop-down list, used when aspirating the Diluent Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Aspirate Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Aspirate Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset.	Bottom

Add Diluent Task Properties Table *(Page 2 of 10)*

Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Aspirate Z Offset	Used only when PROBE is selected; the distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Aspirate Z Option used when aspirating the Diluent Volume from the bed.	2 mm
Aspirate LLF	Used only when PROBE is selected; select TRUE and the probe will follow the liquid down as it is aspirated from the Diluent Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Diluent Zone.	FALSE

Add Diluent Task Properties Table *(Page 3 of 10)*

Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Dispense Z Option	One of five defined reference points, selected from a drop-down list, used when delivering the Diluent Volume to the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Dispense Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Dispense Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset.	Bottom
Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Dispense Z Option used when delivering the Diluent Volume to the bed.	2 mm
Dispense LLF	Select TRUE and the probe will follow the liquid up as it is delivered to the Sample Zone. The Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid up as it is delivered to the Sample Zone.	FALSE

Add Diluent Task Properties Table *(Page 4 of 10)*

Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Mix	Select TRUE to perform a mix of the Diluent Volume with the Sample Volume (and optionally with air too). Select FALSE for no mixing.	FALSE
Mix with Liquid	Used only if MIX=TRUE selected; select TRUE to mix with liquid or select FALSE to mix with air.	TRUE
Number of Cycles	Used only if MIX=TRUE selected; type the number of times the Task should repeat the commands related to mixing.	2
Mixing Volume	Used only if MIX=TRUE selected; the quantity of liquid or air used as part of a mixing process.	0 µL
Mix Aspirate Flow Rate	Used only if MIX=TRUE selected; the speed at which volumes move into the probe during the mixing process.	1 mL/min
Mix Dispense Flow Rate	Used only if MIX=TRUE selected; the speed at which volumes move out of the probe during the mixing process.	10 mL/min

Add Diluent Task Properties Table *(Page 5 of 10)*

Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Mix Aspirate Z Option	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; one of five defined reference points, selected from a drop-down list, used when aspirating the Mixing Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Mix Aspirate Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Mix Aspirate Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Mix Aspirate Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Aspirate Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Mix Aspirate Z Offset.	Bottom
Mix Aspirate Z Offset	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; the distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Aspirate Z Option used when aspirating the Mixing Volume from the bed.	2 mm

Add Diluent Task Properties Table *(Page 6 of 10)*

Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Mix Aspirate LLF	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone as part of the mixing process. The Mix Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone as part of the mixing process.	FALSE
Mix Dispense Z Option	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; one of five defined reference points, selected from a drop-down list, used when delivering the Mixing Volume to the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Mix Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Mix Dispense Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Dispense Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset.	Bottom

Add Diluent Task Properties Table *(Page 7 of 10)*

Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Mix Dispense Z Offset	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; the distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Dispense Z Option used when delivering the Mixing Volume to the bed.	2 mm
Mix Dispense LLF	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; select TRUE and the probe will follow the liquid up as it is delivered to the Sample Zone as part of the mixing process. The Mix Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid up as it is delivered to the Sample Zone as part of the mixing process.	FALSE
Inside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

Add Diluent Task Properties Table *(Page 8 of 10)*

Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Inside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the inside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset.	Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1

Add Diluent Task Properties Table *(Page 9 of 10)*

Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Add Diluent Task Properties Table *(Page 10 of 10)*

Sequence of Steps

ASPIRATE

1 Move Z to top.

2 If Diluent Source = PROBE, move to Diluent Well in Diluent Zone. If Diluent Source = RESERVOIR, switch dilutor valve to reservoir.

3 If Diluent Source = PROBE, switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.

4 If Diluent Source = PROBE, lower probe to Aspirate Z Option and Aspirate Z Offset.

5 Aspirate Diluent Volume at Aspirate Flow Rate.

6 If Diluent Source = PROBE, move Z to top.

DISPENSE

1 Move to Sample Well in Sample Zone.

2 Lower probe to Dispense Z Option and Dispense Z Offset.

3 Dispense Diluent Volume at Dispense Flow Rate.

4 Move Z to top.

DRAIN

1 Move to Inside Rinse Well in Inside Rinse Zone.

2 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.

3 If Diluent Source = PROBE, dispense 1/2 Air Gap Volume at Inside Rinse Flow Rate.

MIX (OPTIONAL)

1 If Mix = TRUE

   a) Move Z to top.

   b) If Mix with Liquid = TRUE, aspirate Air Gap Volume at Air Gap Flow Rate.

   c) Move to Sample Well in Sample Zone.

   d) If Mix with Liquid = TRUE, lower probe to Mix Aspirate Z Option and Mix Aspirate Z Offset. If Mix with Liquid = FALSE, move Z to top.

   e) If Mix with Liquid = FALSE, aspirate Air Gap Volume at Air Gap Flow Rate (first cycle only).

   f) Aspirate Mixing Volume at Mix Aspirate Flow Rate.

   g) Lower probe to Mix Dispense Z Option and Mix Dispense Z Offset.

   h) Dispense Mixing Volume at Mix Dispense Flow Rate.

   i) Repeat steps d–h for Number of Cycles.

2 Move Z to top.

INSIDE RINSE

1 Move to Inside Rinse Well in Inside Rinse Zone.

2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

9 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

Dilute

This Task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. The Task next aspirates sample from the wells of the sample zone and then dispenses again to the result zone.

If any extra volume of the diluent is aspirated, it is dispensed with the air gap in the drain. If no extra volume of diluent is aspirated then the air gap is dispensed 1/2 to the drain and 1/2 to result.

An optional mix with liquid or air is included in this Task.

The inside and outside of the probe is rinsed.

Properties

Dilute Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Diluent Source	Select PROBE or RESERVOIR.	RESERVOIR
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Sample Volume is aspirated.	

Dilute Task Properties Table *(Page 1 of 12)*

Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Well	Enter the well number in the Sample Zone.	0
Diluent Zone	Used only if PROBE is selected; the zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Diluent Volume is aspirated.	
Diluent Well	Used only if PROBE is selected; enter the well number in the Diluent Zone.	0
Result Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Sample Volume and Diluent Volume are delivered.	
Result Well	Enter the well number in the Result Zone.	0
Air Gap Volume	The quantity of an air gap.	6 µL
Sample Volume	The quantity of sample.	0 µL
Diluent Volume	The quantity of liquid used to dilute the sample volume in the Sample Well in the Sample Zone.	0 µL
Diluent Extra Volume	Used only if PROBE is selected; an additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated and acts as an extra buffer between the air gap/reservoir solvent and the Diluent Volume.	0 µL
Sample Flow Rate	The speed at which the Sample Volume moves into the probe.	1.5 mL/min
Diluent Flow Rate	The speed at which the Diluent Volume moves into the probe.	1.5 mL/min

Dilute Task Properties Table *(Page 2 of 12)*

Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Result Flow Rate	The speed at which the Sample Volume, Diluent Volume, and Air Gap Volume moves out of the probe.	3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Sample Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Sample Volume from the bed.	2 mm

Dilute Task Properties Table *(Page 3 of 12)*

Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Aspirate Sample LLF	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE
Diluent Z Option	Used only when PROBE is selected; one of five defined reference points, selected from a drop-down list, used when aspirating the Diluent Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Diluent Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Diluent Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Diluent Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Diluent Z Offset.	Bottom

Dilute Task Properties Table *(Page 4 of 12)*

Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Diluent Z Offset	Used only when PROBE is selected; the distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Diluent Z Option used when aspirating the Diluent Volume from the bed.	2 mm
Aspirate Diluent LLF	Used only when PROBE is selected; select TRUE and the probe will follow the liquid down as it is aspirated from the Diluent Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Diluent Zone.	FALSE

Dilute Task Properties Table *(Page 5 of 12)*

Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Result Z Option	One of five defined reference points, selected from a drop-down list, used when delivering the Diluent Volume, Sample Volume, and Air Gap Volume to the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Result Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Result Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Result Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Result Z Offset.	Bottom
Result Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Result Z Option used when delivering the Diluent Volume, Sample Volume, and Air Gap Volume to the bed.	2 mm

Dilute Task Properties Table *(Page 6 of 12)*

Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Dispense LLF	Select TRUE and the probe will follow the liquid up as it is delivered to the Result Zone. The Result Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid up as it is delivered to the Result Zone.	FALSE
Mix	Select TRUE to perform a mix of the Diluent Volume with the Sample Volume (and optionally with air too). Select FALSE for no mixing.	FALSE
Mix with Liquid	Used only if MIX=TRUE selected; select TRUE to mix with liquid or select FALSE to mix with air.	TRUE
Number of Cycles	Used only if MIX=TRUE selected; type the number of times the Task should repeat the commands related to mixing.	2
Mixing Volume	Used only if MIX=TRUE selected; the quantity of liquid or air used as part of a mixing process.	0 µL
Mix Aspirate Flow Rate	Used only if MIX=TRUE selected; the speed at which volumes move into the probe during the mixing process.	1 mL/min
Mix Dispense Flow Rate	Used only if MIX=TRUE selected; the speed at which volumes move out of the probe during the mixing process.	10 mL/min

Dilute Task Properties Table *(Page 7 of 12)*

Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Mix Aspirate Z Option	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; one of five defined reference points, selected from a drop-down list, used when aspirating the Mixing Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Mix Aspirate Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Mix Aspirate Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Aspirate Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Mix Aspirate Z Offset.	Bottom
Mix Aspirate Z Offset	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; the distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Aspirate Z Option used when aspirating the Mixing Volume from the bed.	2 mm

Dilute Task Properties Table *(Page 8 of 12)*

Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Mix Aspirate LLF	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone as part of the mixing process. The Mix Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone as part of the mixing process.	FALSE
Mix Dispense Z Option	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; one of five defined reference points, selected from a drop-down list, used when delivering the Mixing Volume to the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Mix Dispense Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Dispense Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset.	Bottom

Dilute Task Properties Table *(Page 9 of 12)*

Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Mix Dispense Z Offset	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; the distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Dispense Z Option used when delivering the Mixing Volume to the bed.	2 mm
Mix Dispense LLF	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; select TRUE and the probe will follow the liquid up as it is delivered to the Sample Zone as part of the mixing process. The Mix Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid up as it is delivered to the Sample Zone as part of the mixing process.	FALSE
Inside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume (µL) moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

Dilute Task Properties Table *(Page 10 of 12)*

Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Inside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the inside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset.	Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1

Dilute Task Properties Table *(Page 11 of 12)*

Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Dilute Task Properties Table *(Page 12 of 12)*

Sequence of Steps

1 Move Z to top.

2 If Diluent Source = RESERVOIR, switch dilutor valve to reservoir. If Diluent Source = PROBE, switch dilutor valve to probe.

3 If Diluent Source = PROBE, aspirate Air Gap Volume at Air Gap Flow Rate.

4 If Diluent Source = PROBE, move to Diluent Well in Diluent Zone.

5 If Diluent Source = PROBE, lower probe to Diluent Z Option and Diluent Z Offset.

6 If Diluent Source = RESERVOIR, aspirate Diluent Volume at Diluent Flow Rate. If Diluent Source = PROBE, aspirate Diluent Volume + Diluent Extra Volume at Diluent Flow Rate.

7 If Diluent Source = RESERVOIR, switch dilutor valve to probe. If Diluent Source = PROBE, move Z to top.

8 If Diluent Source = RESERVOIR, move to Result Well in Result Zone.

9 If Diluent Source = RESERVOIR, lower probe to Result Z Option and Result Z Offset.

10 If Diluent Source = RESERVOIR, dispense Diluent Volume at Result Flow Rate.

11 If Diluent Source = RESERVOIR, move Z to top.

12 Aspirate Air Gap Volume at Air Gap Flow Rate.

13 Move to Sample Well in Sample Zone.

14 Move to Sample Z Option and Sample Z Offset.

15 Aspirate Sample Volume at Sample Flow Rate.

16 Move Z to top.

17 Move to Result Well in Result Zone.

18 Lower probe to Result Z Option and Result Z Offset.

19 If Diluent Source = RESERVOIR, dispense Sample Volume at Result Flow Rate. If Diluent Source = PROBE, dispense Sample Volume + Air Gap Volume + Diluent Volume at Result Flow Rate.

20 Move Z to top.

DRAIN

1 Move to Inside Rinse Well in Inside Rinse Zone.

2 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.

3 If Diluent Source = RESERVOIR, dispense Air Gap Volume at Inside Rinse Flow Rate. If Diluent Source = PROBE, dispense Diluent Extra Volume + Air Gap Volume at Inside Rinse Flow Rate.

MIX (OPTIONAL)

1 If Mix = TRUE

   a) Move Z to top.

   b) If Mix with Liquid = TRUE, aspirate Air Gap Volume at Air Gap Flow Rate.

   c) Move to Result Well in Result Zone.

   d) If Mix with Liquid = TRUE, lower probe to Mix Aspirate Z Option and Mix Aspirate Z Offset. If Mix with Liquid = FALSE, move Z to top.

   e) If Mix with Liquid = FALSE, aspirate Air Gap Volume at Air Gap Flow Rate (first cycle only).

f) Aspirate Mixing Volume at Mix Aspirate Flow Rate.

g) Lower probe to Mix Dispense Z Option and Mix Dispense Z Offset.

h) Dispense Mixing Volume at Mix Dispense Flow Rate.

i) Repeat steps d–h for Number of Cycles.

2 Move Z to top.

INSIDE RINSE

1 Move to Inside Rinse Well in Inside Rinse Zone.

2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

9 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

Injection Rinse

This Task is used to rinse the injection port.

Note: This Task must be used with another task as it does not include any move instructions.

Properties

Injection Rinse Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Rinse Volume	The quantity of liquid dispensed.	1000 µL
Rinse Flow Rate	The speed at which the Rinse Volume moves out of the probe and into the injection port.	3 mL/min

Injection Rinse Task Properties

Inside Rinse

This Task moves to the rinse station and then rinses the inside of the probe.

Properties

Inside Rinse Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Inside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Rinse Flow Rate	The speed at which the Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	3 mL/min

Inside Rinse Task Properties Table *(Page 1 of 2)*

Inside Rinse Task Properties

Property Name	*Description*	*Default Value*
Inside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the inside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset.	Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Inside Rinse Task Properties Table *(Page 2 of 2)*

Sequence of Steps

1 Move Z to top.

2 Move to Inside Rinse Well in Inside Rinse Zone.

3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

4 Home dilutor.

5 Switch dilutor valve to reservoir.

6 Aspirate Rinse Volume or syringe capacity at Rinse Flow Rate.

7 Switch dilutor valve to probe.

8 Dispense Rinse Volume or syringe capacity at Rinse Flow Rate.

9 Repeat steps 5–8 until requested rinse volume is aspirated and dispensed.

Mix With Air

This Task aspirates air and then dispenses it into a well at a set height. The aspirate and dispense are repeated several times, if required.

The inside and outside of the probe is rinsed.

Properties

Mix With Air Task Properties

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the associated configuration, that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	
Mixing Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the Mixing Volume is mixed.	
Mixing Well	Enter the well number in the Mixing Zone.	0
Number of Wells to Mix	The number of Mixing Wells to mix.	1
Number of Cycles	Type the number of times the Task should repeat the commands related to mixing.	2
Mixing Volume	The quantity of air used as part of a mixing process.	0

Mix With Air Task Properties Table *(Page 1 of 6)*

Mix With Air Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Air Gap Volume	The quantity of an air gap.	6 µL
Aspirate Flow Rate	The speed at which a volume air moves into the probe.	1 mL/min
Dispense Flow Rate	The speed at which a volume of air moves out of the probe.	10 mL/min
Dispense Z Option	One of five defined reference points, selected from a drop-down list, used when delivering air to the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Aspirate Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Dispense Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset.	Bottom

Mix With Air Task Properties Table *(Page 2 of 6)*

Mix With Air Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Dispense Z Option for delivering air to the bed.	2 mm
Dispense LLF	Not used.	FALSE
Inside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

Mix With Air Task Properties Table *(Page 3 of 6)*

Mix With Air Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the inside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset.	Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse

Mix With Air Task Properties Table *(Page 4 of 6)*

Mix With Air Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

Mix With Air Task Properties Table *(Page 5 of 6)*

Mix With Air Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Mix With Air Task Properties Table *(Page 6 of 6)*

Sequence of Steps

MIX

1 Move Z to top.
2 Move to Mixing Well in Mixing Zone.
3 Move Z to top.
4 Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate (first cycle only).
5 Aspirate Mixing Volume at Aspirate Flow Rate.
6 Lower probe to Dispense Z Option and Dispense Z Offset.
7 Dispense Mixing Volume at Dispense Flow Rate.
8 Repeat steps 4–7 for Number of Cycles.
9 Move Z to top.

INSIDE RINSE

1 Move to Inside Rinse Well in Inside Rinse Zone.
2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3 Home dilutor.
4 Switch dilutor valve to reservoir.
5 Aspirate Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.
6 Switch dilutor valve to probe.
7 Dispense Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

9 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

9 Repeat Number of Wells to Mix.

Mix with Liquid

This Task aspirates liquid and then dispenses it into a well at a set height (several times, if required).

The inside and outside of the probe is rinsed.

Properties

Mix with Liquid Task Properties

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the associated configuration, that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	
Mixing Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the Mixing Volume is mixed.	
Mixing Well	Enter the well number in the Mixing Zone.	0
Number of Wells to Mix	The number of Mixing Wells to mix.	1
Number of Cycles	Type the number of times the Task should repeat the commands related to mixing.	2
Mixing Volume	The quantity of liquid used as part of a mixing process.	0

Mix with Liquid Task Properties Table *(Page 1 of 8)*

Mix with Liquid Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Air Gap Volume	The quantity of an air gap.	6 µL
Aspirate Flow Rate	The speed at which the Mixing Volume moves into the probe.	1 mL/min
Dispense Flow Rate	The speed at which the Mixing Volume moves out of the probe.	10 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Aspirate Z Option	One of five defined reference points, selected from a drop-down list, used when drawing liquid(s) from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Aspirate Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Aspirate Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset.	Bottom

Mix with Liquid Task Properties Table *(Page 2 of 8)*

Mix with Liquid Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Aspirate Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Aspirate Z Option for drawing liquid(s) from the bed.	2 mm
Aspirate LLF	Select TRUE and the probe will follow the liquid down as it is aspirated from the Mixing Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Mixing Zone.	FALSE

Mix with Liquid Task Properties Table *(Page 3 of 8)*

Mix with Liquid Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Dispense Z Option	One of five defined reference points, selected from a drop-down list, used when delivering liquid(s) to the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Aspirate Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Dispense Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset.	Bottom
Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Dispense Z Option for delivering liquid(s) to the bed.	2

Mix with Liquid Task Properties Table *(Page 4 of 8)*

Mix with Liquid Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Dispense LLF	Select TRUE and the probe will follow the liquid up as it is delivered to the Mixing Zone. The Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid up as it is delivered to the Mixing Zone.	FALSE
Inside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

Mix with Liquid Task Properties Table *(Page 5 of 8)*

Mix with Liquid Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the inside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Inside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset.	Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Mix with Liquid Task Properties Table *(Page 6 of 8)*

Mix with Liquid Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

Mix with Liquid Task Properties Table *(Page 7 of 8)*

Mix with Liquid Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Mix with Liquid Task Properties Table *(Page 8 of 8)*

Sequence of Steps

MIX

1 Move Z to top.
2 Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.
3 Move to Mixing Well in Mixing Zone.
4 Lower probe to Aspirate Z Option and Aspirate Z Offset.
5 Aspirate Mixing Volume at Aspirate Flow Rate.
6 Lower probe to Dispense Z Option and Dispense Z Offset.
7 Dispense Mixing Volume at Dispense Flow Rate.
8 Repeat steps 4–7 for Number of Cycles.
9 Move Z to top.

INSIDE RINSE

1 Move to Inside Rinse Well in Inside Rinse Zone.
2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3 Home dilutor.
4 Switch dilutor valve to reservoir.
5 Aspirate Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.
6 Switch dilutor valve to probe.
7 Dispense Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

9 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

9 Repeat Number of Wells to Mix.

Transfer

This Task aspirates the specified amount of sample volume from the wells of the source zone and then dispenses to the wells of the result zone.

If any extra volume of the source is aspirated, it is dispensed with the air gap in the drain. If no extra volume of source is aspirated then the air gap is dispensed 1/2 to the drain and 1/2 to result.

The inside and outside of the probe is rinsed.

Properties

Transfer Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the associated configuration, that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	
Source Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Source Volume and Extra Volume are drawn.	
Source Well	Enter the well number in the Source Zone.	0
Result Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Source Volume is delivered.	

Transfer Task Properties Table *(Page 1 of 7)*

Transfer Task Properties (Continued)

Property Name	*Description*	*Default Value*
Result Well	Enter the well number in the Result Zone.	0
Number of Wells to Transfer	The number of Source Wells to transfer to Result Wells.	1
Air Gap Volume	The quantity of the air gap aspirated before the Source Volume.	6 µL
Source Volume	The quantity of sample	0
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0
Aspirate Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe.	1.5 mL/min
Dispense Flow Rate	The speed at which the Source Volume moves out of the probe.	3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3

Transfer Task Properties Table *(Page 2 of 7)*

Transfer Task Properties (Continued)

Property Name	*Description*	*Default Value*
Aspirate Z Option	One of five defined reference points, selected from a drop-down list, used when drawing liquid(s) from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Aspirate Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Aspirate Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Aspirate Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset.	Bottom
Aspirate Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Aspirate Z Option for drawing liquid(s) from the bed.	2 mm

Transfer Task Properties Table *(Page 3 of 7)*

Transfer Task Properties (Continued)

Property Name	*Description*	*Default Value*
Aspirate LLF	Select TRUE and the probe will follow the liquid down as it is aspirated from the Source Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Source Zone.	FALSE
Dispense Z Option	One of five defined reference points, selected from a drop-down list, used when delivering liquid(s) to the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Result Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Dispense Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset.	Bottom

Transfer Task Properties Table *(Page 4 of 7)*

Transfer Task Properties (Continued)

Property Name	*Description*	*Default Value*
Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Dispense Z Option for delivering liquid(s) to the bed.	2 mm
Dispense LLF	Select TRUE and the probe will follow the liquid up as it is delivered to the Result Zone. The Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid up as it is delivered to the Result Zone.	FALSE
Inside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

Transfer Task Properties Table *(Page 5 of 7)*

Transfer Task Properties (Continued)

Property Name	*Description*	*Default Value*
Inside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the inside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Inside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset.	Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1

Transfer Task Properties Table *(Page 6 of 7)*

Transfer Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Transfer Task Properties Table *(Page 7 of 7)*

Sequence of Steps

ASPIRATE

1 Move Z to top.
2 Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.
3 Move to Source Well in Source Zone.
4 Lower probe to Aspirate Z Option and Aspirate Z Offset.
5 Aspirate Source Volume + Extra Volume at Aspirate Flow Rate.
6 Move Z to top.

DISPENSE

1 Move to Result Well in Result Zone.
2 Lower probe to Dispense Z Option and Dispense Z Offset.
3 Dispense Source Volume at Dispense Flow Rate.
4 Move Z to top.

INSIDE RINSE

1 Move to Inside Rinse Well in Inside Rinse Zone.
2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3 Home dilutor.
4 Switch dilutor valve to reservoir.
5 Aspirate Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Inside Rinse Volume or syringe capacity at Inside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

9 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

9 Repeat Number of Wells to Transfer.

Move to Sample Location

This Task positions the probe in a specified well in a specified zone at a specified height.

Properties

Move to Sample Location Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to move to.	
Sample Well	Enter the well number in the Sample Zone.	0

Move to Sample Location Task Properties Table *(Page 1 of 2)*

Move to Sample Location Task Properties

Property Name	*Description*	*Default Value*
Z Option	One of five defined reference points, selected from a drop-down list, used when performing the move: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Z Offset.	Bottom
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Z Option.	2 mm

Move to Sample Location Task Properties Table *(Page 2 of 2)*

Outside Rinse

This Task moves to the rinse station and then rinses the outside of the probe.

Properties

Outside Rinse Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	1000 µL
Rinse Flow Rate	The speed at which the Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	3 mL/min

Outside Rinse Task Properties Table *(Page 1 of 2)*

Outside Rinse Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

Outside Rinse Task Properties Table *(Page 2 of 2)*

Sequence of Steps

1 Move Z to top.

2 Move to Outside Rinse Well in Outside Rinse Zone.

3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

4 Home dilutor.

5 Switch dilutor valve to reservoir.

6 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

7 Switch dilutor valve to probe.

8 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

9 Repeat steps 5–8 until requested rinse volume is aspirated and dispensed.

Prime Dilutor

This Task primes the dilutor in the specified zone. It aspirates the specified amount of volume from the reservoir (or the syringe capacity) and then dispenses to the specified wells. If the volume specified exceeds the syringe capacity, then multiple aspirates and dispenses will be performed to deliver the requested volume.

Properties

Prime Dilutor Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the associated configuration, that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	
Number of Cycles	Enter the number of times to repeat aspirating and dispensing.	4
Flow Rate	The speed at which the solvent moves into the syringe and then out of the probe.	10 mL/min
Zone	A grouping of wells, selected from a drop-down list of zones defined in the associated Bed Layout.	Inside Rinse
Well	Enter the well number in the Zone.	1

Prime Dilutor Task Properties Table *(Page 1 of 2)*

Prime Dilutor Task Properties (Continued)

Property Name	*Description*	*Default Value*
Z Option	One of five defined reference points, selected from a drop-down list, used when delivering liquid(s) to the rinse station: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Z Offset.	Bottom
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Z Option for delivering liquid(s) to the rinse station.	2 mm

Prime Dilutor Task Properties Table *(Page 2 of 2)*

Sequence of Steps

1 Move Z to top

2 Move probe to Well in Zone.

3 Lower probe to Z Option and Z Offset.

4 Home dilutor.
5 Switch dilutor valve to reservoir
6 Aspirate full syringe capacity at Flow Rate.
7 Switch dilutor valve to probe.
8 Dispense full syringe capacity at Flow Rate.
9 Repeat steps 5–8 for Number of Cycles.

Write to Display

This Task displays a message in the front panel display of the selected instrument.

Properties

Write to Display Task Properties

Property Name	*Description*	*Default Value*
Instrument	The instrument, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Message	Enter the text to display on the Instrument's front panel.	Message
Line	For two-line displays, indicate the line on which to display the message.	1

Write to Display Task Properties

231/232 XL Sample Injectors Tasks

The table below lists the tasks for the 231 and 232 XL Sample Injectors.

231/232 XL Sample Injectors Tasks

Gilson Task Name and Description	*For detailed information:*
Add Diluent This Task aspirates the specified amount of diluent volume and then dispenses to the Sample Zone.	See page A-107.
Aspirate This Task aspirates an air gap or draws liquid from the bed or aspirates liquid from the reservoir. If drawing liquid from the bed, this Task must be used in conjunction with the Move to Sample Location Task.	See page A-99.
Contact Open-Close This Task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.	See page A-467.
Dilute This Task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. The Task next aspirates sample from the wells of the sample zone and then dispenses again to the result zone.	See page A-120.
231/232 XL Sample Injectors Tasks Table *(Page 1 of 4)*	

231/232 XL Sample Injectors Tasks (Continued)

Dispense This Task delivers liquid or air and must be used in conjunction with the Move to Sample Location Task.	See page A-101.
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Home Liquid Handler This Task homes the specified liquid handler.	See page A-103.
Injection Rinse This Task is used to rinse the injection port.	See page A-136.
Injection Valve Position This Task sets the injection valve position on the Injector to either LOAD or INJECT.	See page A-71.
Inside Rinse This Task moves to the rinse station and then rinses the inside of the probe.	See page A-137.
Mix With Air This Task aspirates air and then dispenses it into a well at a set height. The aspirate and dispense are repeated several times, if required. The inside and outside of the probe is rinsed.	See page A-140.
231/232 XL Sample Injectors Tasks Table *(Page 2 of 4)*	

231/232 XL Sample Injectors Tasks (Continued)

Mix with Liquid This Task aspirates liquid and then dispenses it into a well at a set height (several times, if required). The inside and outside of the probe is rinsed.	See page A-148.
Move to Sample Location This Task positions the probe in a specified well in a specified zone at a specified height.	See page A-167.
Outside Rinse This Task moves to the rinse station and then rinses the outside of the probe.	See page A-169.
Prime Dilutor This Task primes the dilutor in the specified zone. It aspirates the specified amount of volume from the reservoir (or the syringe capacity) and then dispenses to the specified wells. If the volume specified exceeds the syringe capacity, then multiple aspirates and dispenses will be performed to deliver the requested volume.	See page A-172.
Transfer This Task aspirates the specified amount of sample volume from the wells of the source zone and then dispenses to the wells of the result zone. The inside and outside of the probe is rinsed.	See page A-158.
Wait for Contact This Task initiates a wait in the Method until a contact state change is detected of the specified input contact on the specified Instrument.	See page A-45.
231/232 XL Sample Injectors Tasks Table *(Page 3 of 4)*	

231/232 XL Sample Injectors Tasks (Continued)

XL Low Volume Partial Loop Injection This Task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.	See page A-180.
XL Partial Loop Injection This Task performs a partial loop injection.	See page A-188.
XL Total Loop Injection This Task performs a total loop injection.	See page A-195.
231/232 XL Sample Injectors Tasks Table *(Page 4 of 4)*	

XL Low Volume Partial Loop Injection

This Task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.

Properties

XL Low Volume Partial Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Sample Injector	The sample injector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	3 µL

XL Low Volume Partial Loop Injection Task Properties Table *(Page 1 of 5)*

XL Low Volume Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	10 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	10 µL
Injection Volume	The volume of sample to be injected.	0
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	3 sec

XL Low Volume Partial Loop Injection Task Properties Table *(Page 2 of 5)*

XL Low Volume Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume and Extra Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2

XL Low Volume Partial Loop Injection Task Properties Table *(Page 3 of 5)*

XL Low Volume Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Liquid Level Following	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE
Drain Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	250 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	4 mL/min
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	450 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

XL Low Volume Partial Loop Injection Task Properties Table *(Page 4 of 5)*

XL Low Volume Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2

XL Low Volume Partial Loop Injection Task Properties Table *(Page 5 of 5)*

Sequence of Steps

1 Move Z to top.
2 Set injection valve to INJECT.
3 Move to Drain Well in Drain Zone and lower probe into well.
4 Home dilutor.
5 Move Z to top.

ASPIRATE

1 Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.
2 Switch dilutor valve to reservoir and aspirate Push Volume at Aspirate Flow Rate.
3 Move to Sample Well in Sample Zone.
4 Lower probe into well to Sample Z Option and Sample Z Offset.
5 Switch dilutor valve to probe and aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.
6 Move Z to top.

INJECT

1 Move to Injection Well in Injection Zone.
2 Dispense Extra Volume at Dispense Flow Rate.
3 Switch injection valve to LOAD.
4 Wait 1.2 sec.
5 Dispense Injection Volume + Push Volume at Dispense Flow Rate.

6 Wait Injection Equilibration Time.

7 Synchronize.

INJECTION PORT RINSE

1 Switch injection valve to INJECT.

2 Move to Injection Well in Injection Zone.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

9 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

XL Partial Loop Injection

This Task performs a partial loop injection.

Properties

XL Partial Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Sample Injector	The sample injector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	3 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	10 µL

XL Partial Loop Injection Task Properties Table *(Page 1 of 5)*

XL Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	3 sec

XL Partial Loop Injection Task Properties Table *(Page 2 of 5)*

XL Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume and Extra Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE

XL Partial Loop Injection Task Properties Table *(Page 3 of 5)*

XL Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Drain Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	250 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	4 mL/min
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	450 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

XL Partial Loop Injection Task Properties Table *(Page 4 of 5)*

XL Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2

XL Partial Loop Injection Task Properties Table *(Page 5 of 5)*

Sequence of Steps

1 Move Z to top.

2 Set injection valve to INJECT.

3 Move to Drain Well in Drain Zone and lower probe into well.

4 Home dilutor.

5 Move Z to top.

ASPIRATE

1 Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.

2 Move to Sample Well in Sample Zone.

3 Lower probe into well to Sample Z Option and Sample Z Offset.

4 Switch dilutor valve to probe and aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.

5 Move Z to top.

INJECT

1 Move to Injection Well in Injection Zone.

2 Dispense Extra Volume at Dispense Flow Rate.

3 Switch injection valve to LOAD.

4 Wait 1.2 sec.

5 Dispense Injection Volume at Dispense Flow Rate.

6 Wait Injection Equilibration Time.

7 Synchronize.

INJECTION PORT RINSE

1 Switch injection valve to INJECT.

2 Home dilutor.

3 Switch dilutor valve to reservoir.

4 Aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

5 Switch dilutor valve to probe.

6 Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

7 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

8 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

XL Total Loop Injection

This Task performs a total loop injection.

Properties

XL Total Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Sample Injector	The sample injector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	3 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	10 µL

XL Total Loop Injection Task Properties Table *(Page 1 of 5)*

XL Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Loop Volume Overfill	A factor to multiply the Loop Volume by that determines the injection volume. Injection Volume = Loop Volume Overfill x Loop Volume.	5
Loop Volume	The capacity of the installed sample loop.	0
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	3 sec

XL Total Loop Injection Task Properties Table *(Page 2 of 5)*

XL Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume and Extra Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm

XL Total Loop Injection Task Properties Table *(Page 3 of 5)*

XL Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Liquid Level Following	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE
Drain Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	250 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	4 mL/min
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	450 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

XL Total Loop Injection Task Properties Table *(Page 4 of 5)*

XL Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

XL Total Loop Injection Task Properties Table *(Page 5 of 5)*

Sequence of Steps

1 Move Z to top.

2 Set injection valve to INJECT.

3 Move to Drain Well in Drain Zone and lower probe into well.

4 Home dilutor.

5 Move Z to top.

ASPIRATE

1 Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.

2 Move to Sample Well in Sample Zone.

3 Lower probe into well to Sample Z Option and Sample Z Offset.

4 Aspirate the injection volume (injection volume = Loop Overfill x Loop Volume) + Extra Volume at Aspirate Flow Rate.

5 Move Z to top.

INJECT

1 Move to Injection Well in Injection Zone.

2 Switch injection valve to LOAD.

3 Wait 1.2 sec.

4 Dispense the injection volume (injection volume = Loop Overfill x Loop Volume) at Dispense Flow Rate.

5 Wait Injection Equilibration Time.

6 Synchronize.

INJECTION PORT RINSE

1 Switch injection valve to INJECT.
2 Home dilutor.
3 Switch dilutor valve to reservoir.
4 Aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
5 Switch dilutor valve to probe.
6 Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.
7 Repeat steps 3–6 until requested rinse volume is aspirated and dispensed.
8 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.
2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3 Home dilutor.
4 Switch dilutor valve to reservoir.
5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.
6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

233 XL Sample Injector Tasks

The table below lists the tasks for the 233 XL Sample Injector.

233 XL Sample Injector Tasks

Gilson Task Name and Description	*For detailed information:*
233 XL Prep Injection with Collection This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the fraction collection valve.	See page A-208.
Add Diluent This Task aspirates the specified amount of diluent volume and then dispenses to the Sample Zone.	See page A-107.
Aspirate This Task aspirates an air gap or draws liquid from the bed or aspirates liquid from the reservoir. If drawing liquid from the bed, this Task must be used in conjunction with the Move to Sample Location Task.	See page A-99.
Collection and Travel Depth This Task customizes probe (used as a dispense needle) movement during fraction collection.	See page A-26.
233 XL Sample Injector Tasks Table *(Page 1 of 5)*	

233 XL Sample Injector Tasks (Continued)

Contact Open-Close This Task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.	See page A-467.
Dilute This Task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. The Task next aspirates sample from the wells of the sample zone and then dispenses again to the result zone.	See page A-120.
Dispense This Task delivers liquid or air and must be used in conjunction with the Move to Sample Location Task.	See page A-101.
Fraction Collection Settings This Task sets all parameters for fraction collection.	See page A-27.
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Home Fraction Collector This Task homes the specified Fraction Collector.	See page A-33.
Home Liquid Handler This Task homes the specified liquid handler.	See page A-103.
233 XL Sample Injector Tasks Table *(Page 2 of 5)*	

233 XL Sample Injector Tasks (Continued)

Injection Rinse This Task is used to rinse the injection port. **Note:** This Task must be used with another task as it does not include any move instructions.	See page A-136.
Injection Valve Position This Task sets the injection valve position on the Injector to either LOAD or INJECT.	See page A-71.
Inside Rinse This Task moves to the rinse station and then rinses the inside of the probe.	See page A-137.
Mix With Air This Task aspirates air and then dispenses it into a well at a set height. The aspirate and dispense are repeated several times, if required. The inside and outside of the probe is rinsed.	See page A-140.
Mix with Liquid This Task aspirates liquid and then dispenses it into a well at a set height (several times, if required). The inside and outside of the probe is rinsed.	See page A-148.
Move to Sample Location This Task positions the probe in a specified well in a specified zone at a specified height.	See page A-167.
233 XL Sample Injector Tasks Table *(Page 3 of 5)*	

233 XL Sample Injector Tasks (Continued)

Outside Rinse This Task moves to the rinse station and then rinses the outside of the probe.	See page A-169.
Prime Dilutor This Task primes the dilutor in the specified zone. It aspirates the specified amount of volume from the reservoir (or the syringe capacity) and then dispenses to the specified wells. If the volume specified exceeds the syringe capacity, then multiple aspirates and dispenses will be performed to deliver the requested volume.	See page A-172.
Set Fraction Site This Task identifies where fraction collection will begin for an injected sample.	See page A-34.
Set Multiple Bed Collection This Task is used to set the fraction site when multiple fraction collectors are being used.	See page A-35.
Set Non Peak Per Tube This Task sets parameters for collecting non-peaks.	See page A-37.
Set Peak Level This Task sets the parameters for fraction collection by level.	See page A-38.
Set Peak Per Tube This Task sets parameters for collecting peaks.	See page A-39.
Set Peak Slope This Task sets the parameters for fraction collection by slope.	See page A-40.
233 XL Sample Injector Tasks Table *(Page 4 of 5)*	

233 XL Sample Injector Tasks (Continued)

Start Fraction Collection This Task tells Trilution LC to begin collecting fractions. This Task has no properties to set.	See page A-43.
Stop Fraction Collection This Task tells Trilution LC to stop collecting fractions. This Task has no properties to set.	See page A-44.
Transfer This Task aspirates the specified amount of sample volume from the wells of the source zone and then dispenses to the wells of the result zone. The inside and outside of the probe is rinsed.	See page A-158.
Wait for Contact This Task initiates a wait in the Method until a contact state change is detected of the specified input contact on the specified Instrument.	See page A-45.
XL Low Volume Partial Loop Injection This Task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.	See page A-180.
XL Partial Loop Injection This Task performs a partial loop injection.	See page A-188.
XL Total Loop Injection This Task performs a total loop injection.	See page A-195.
233 XL Sample Injector Tasks Table *(Page 5 of 5)*	

233 XL Prep Injection with Collection

This task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes a rinse of the fraction collection valve.

Properties

233 XL Prep Injection with Collection Task Properties

Property Name	*Description*	*Default Value*
Sample Injector	The sample injector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Injection Volume and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	6 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	10 µL

233 XL Prep Injection with Collection Task Properties Table *(Page 1 of 5)*

233 XL Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	2 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	2 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.5 mL/min
Injection Equilibration Time	Time the program waits after loading the Injection Volume and Push Volume in the sample loop.	3 sec
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume and Extra Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom

233 XL Prep Injection with Collection Task Properties Table *(Page 2 of 5)*

233 XL Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume from the bed.	2 mm
Liquid Level Following	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE
Injection Z Option	One of five defined reference points, selected from a drop-down list, used when injecting the Injection Volume and Push Volume: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Injection Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset.	Bottom

233 XL Prep Injection with Collection Task Properties Table *(Page 3 of 5)*

233 XL Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Push Volume.	0 mm
Drain Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Fraction Valve Rinse Time	The time the program will wait after switching the fraction collection valve to COLLECT.	6 sec
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	400 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	10 mL/min
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

233 XL Prep Injection with Collection Task Properties Table *(Page 4 of 5)*

233 XL Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

233 XL Prep Injection with Collection Task Properties Table *(Page 5 of 5)*

Sequence of Steps

1 Move Z to top.
2 Set injection valve to INJECT.
3 Set switching valve to LOAD.
4 Move to Drain Well in Drain Zone and lower probe into well.
5 Home dilutor.
6 Switch fraction collection valve to COLLECT for Fraction Valve Rinse Time.
7 Move Z to top.

ASPIRATE

1 Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.
2 Switch dilutor valve to reservoir and aspirate Push Volume at Aspirate Flow Rate.
3 Move to Sample Well in Sample Zone.
4 Lower probe into well to Sample Z Option and Sample Z Offset.
5 Switch dilutor valve to probe and aspirate Injection Volume at Aspirate Flow Rate.
6 Move Z to top.

INJECT

1 Move to Injection Well in Injection Zone.
2 Lower probe into well to Injection Z Option and Injection Z Offset.

3 Switch injection valve to LOAD.

4 Wait 1.2 sec.

5 Dispense Injection Volume + Push Volume at Dispense Flow Rate.

6 Wait Injection Equilibration Time.

7 Synchronize.

8 Switch injection valve to INJECT.

INJECTION PORT RINSE

1 Home dilutor.

2 Switch dilutor valve to reservoir.

3 Aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

4 Switch dilutor valve to probe.

5 Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

6 Repeat steps 2–5 until requested rinse volume is aspirated and dispensed.

7 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

234 Autoinjector Tasks

The table below lists the tasks for the 234 Autoinjector.

234 Autoinjector Tasks

Gilson Task Name and Description	*For detailed information:*
234 Partial Loop Injection This Task performs a partial loop injection.	See page A-220.
234 Total Loop Injection Task Properties This Task performs a total loop injection.	See page A-227.
Add Diluent This Task aspirates the specified amount of diluent volume and then dispenses to the Sample Zone.	See page A-107.
Aspirate This Task aspirates an air gap or draws liquid from the bed or aspirates liquid from the reservoir. If drawing liquid from the bed, this Task must be used in conjunction with the Move to Sample Location Task.	See page A-99.
Contact Open-Close This Task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.	See page A-467.
234 Autoinjector Tasks Table *(Page 1 of 4)*	

234 Autoinjector Tasks (Continued)

Dilute This Task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. The Task next aspirates sample from the wells of the sample zone and then dispenses again to the result zone.	See page A-120.
Dispense This Task delivers liquid or air and must be used in conjunction with the Move to Sample Location Task.	See page A-101.
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Home Liquid Handler This Task homes the specified liquid handler.	See page A-103.
Injection Rinse This Task is used to rinse the injection port. **Note:** This Task must be used with another task as it does not include any move instructions.	See page A-136.
Injection Valve Position This Task sets the injection valve position on the Injector to either LOAD or INJECT.	See page A-71.
Inside Rinse This Task moves to the rinse station and then rinses the inside of the probe.	See page A-137.
234 Autoinjector Tasks Table *(Page 2 of 4)*	

234 Autoinjector Tasks (Continued)

Mix With Air This Task aspirates air and then dispenses it into a well at a set height. The aspirate and dispense are repeated several times, if required. The inside and outside of the probe is rinsed.	See page A-140.
Mix with Liquid This Task aspirates liquid and then dispenses it into a well at a set height (several times, if required). The inside and outside of the probe is rinsed.	See page A-148.
Move to Sample Location This Task positions the probe in a specified well in a specified zone at a specified height.	See page A-167.
Outside Rinse This Task moves to the rinse station and then rinses the outside of the probe.	See page A-169.
Prime Dilutor This Task primes the dilutor in the specified zone. It aspirates the specified amount of volume from the reservoir (or the syringe capacity) and then dispenses to the specified wells. If the volume specified exceeds the syringe capacity, then multiple aspirates and dispenses will be performed to deliver the requested volume.	See page A-172.
234 Autoinjector Tasks Table *(Page 3 of 4)*	

234 Autoinjector Tasks (Continued)

Transfer This Task aspirates the specified amount of sample volume from the wells of the source zone and then dispenses to the wells of the result zone. The inside and outside of the probe is rinsed.	See page A-158.
Wait for Contact This Task initiates a wait in the Method until a contact state change is detected of the specified input contact on the specified Instrument.	See page A-45.
234 Autoinjector Tasks Table *(Page 4 of 4)*	

234 Partial Loop Injection

This Task performs a partial loop injection.

Properties

234 Partial Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Autoinjector	The autoinjector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Extra Volume and Injection Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	3 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	6 µL
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.3 mL/min

234 Partial Loop Injection Task Properties Table *(Page 1 of 5)*

234 Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	3 sec
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume and Extra Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom

234 Partial Loop Injection Task Properties Table *(Page 2 of 5)*

234 Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE
Injection Z Option	One of five defined reference points, selected from a drop-down list, used when injecting the Injection Volume and Extra Volume: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Injection Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset.	Bottom

234 Partial Loop Injection Task Properties Table *(Page 3 of 5)*

234 Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Extra Volume.	1 mm
Drain Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	250 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	3 mL/min
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	300 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	3 mL/min

234 Partial Loop Injection Task Properties Table *(Page 4 of 5)*

234 Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2

234 Partial Loop Injection Task Properties Table *(Page 5 of 5)*

Sequence of Steps

1 Move Z to top.

2 Set injection valve to INJECT.

3 Move to Drain Well in Drain Zone and lower probe into well.

4 Home dilutor.

5 Move Z to top.

ASPIRATE

1 Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.

2 Move to Sample Well in Sample Zone.

3 Lower probe into well to Sample Z Option and Sample Z Offset.

4 Switch dilutor valve to probe and aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.

5 Move Z to top.

INJECT

1 Move to Injection Well in Injection Zone.

2 Lower probe into well to Injection Z Option and Injection Z Offset.

3 Dispense Extra Volume at Dispense Flow Rate.

4 Switch injection valve to LOAD.

5 Wait 1.2 sec.

6 Dispense Injection Volume at Dispense Flow Rate.

7 Wait Injection Equilibration Time.

8 Synchronize.

INJECTION PORT RINSE

1 Switch injection valve to INJECT.

2 Home dilutor.

3 Switch dilutor valve to reservoir.

4 Aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

5 Switch dilutor valve to probe.

6 Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

7 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

8 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

234 Total Loop Injection

This Task performs a total loop injection.

Properties

234 Total Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Autoinjector	The autoinjector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	3 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	5 µL
Loop Volume Overfill	A factor to multiply the Loop Volume by that determines the injection volume. Injection Volume = Loop Volume Overfill x Loop Volume.	5

234 Total Loop Injection Task Properties Table *(Page 1 of 6)*

234 Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Loop Volume	The capacity of the installed sample loop.	0
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.3 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	3 sec
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume and Extra Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom

234 Total Loop Injection Task Properties Table *(Page 2 of 6)*

234 Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE

234 Total Loop Injection Task Properties Table *(Page 3 of 6)*

234 Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Injection Z Option	One of five defined reference points, selected from a drop-down list, used when injecting the Injection Volume and Extra Volume: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Injection Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset.	Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Extra Volume.	1 mm
Drain Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1

234 Total Loop Injection Task Properties Table *(Page 4 of 6)*

234 Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	250 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	3 mL/min
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	300 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	3 mL/min

234 Total Loop Injection Task Properties Table *(Page 5 of 6)*

234 Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if a negative number is entered, probe will move toward the bed bottom. **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

234 Total Loop Injection Task Properties Table *(Page 6 of 6)*

Sequence of Steps

1 Move Z to top.

2 Set injection valve to INJECT.

3 Move to Drain Well in Drain Zone and lower probe into well.

4 Home dilutor.

5 Move Z to top.

ASPIRATE

1 Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.

2 Move to Sample Well in Sample Zone.

3 Lower probe into well to Sample Z Option and Sample Z Offset.

4 Aspirate the injection volume (injection volume = Loop Overfill x Loop Volume) + Extra Volume at Aspirate Flow Rate.

5 Move Z to top.

INJECT

1 Move to Injection Well in Injection Zone.

2 Lower probe into well to Injection Z Option and Injection Z Offset.

3 Switch injection valve to LOAD.

4 Wait 1.2 sec.

5 Dispense the injection volume (injection volume = Loop Overfill x Loop Volume) at Dispense Flow Rate.

6 Wait Injection Equilibration Time.

7 Synchronize.

INJECTION PORT RINSE

1 Switch injection valve to INJECT.

2 Home dilutor.

3 Switch dilutor valve to reservoir.

4 Aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

5 Switch dilutor valve to probe.

6 Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

7 Repeat steps 3–6 until requested rinse volume is aspirated and dispensed.

8 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

235 Autoinjector Tasks

The table below lists the tasks for the 235 Autoinjector.

235 Autoinjector Tasks

Gilson Task Name and Description	*For detailed information:*
235S Partial Loop Injection This Task performs a partial loop injection.	See page A-240.
235S Total Loop Injection This Task performs a total loop injection.	See page A-247.
235T Injection Rinse This Task is used to rinse the injection port on a 235 Autoinjector with tee injection port. **Note:** This Task must be used with another task as it does not include any move instructions.	See page A-255.
235T Partial Loop Injection This Task performs a partial loop injection on a 235 Autoinjector with a tee injection port.	See page A-256.
235T Total Loop Injection This Task performs a total loop injection on a 235 Autoinjector with tee injection port.	See page A-264.
Add Diluent This Task aspirates the specified amount of diluent volume and then dispenses to the Sample Zone.	See page A-107.
235 Autoinjector Tasks Table *(Page 1 of 4)*	

235 Autoinjector Tasks (Continued)

Aspirate This Task aspirates an air gap or draws liquid from the bed or aspirates liquid from the reservoir. If drawing liquid from the bed, this Task must be used in conjunction with the Move to Sample Location Task.	See page A-99.
Contact Open-Close This Task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.	See page A-467.
Dilute This Task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. The Task next aspirates sample from the wells of the sample zone and then dispenses again to the result zone.	See page A-120.
Dispense This Task delivers liquid or air and must be used in conjunction with the Move to Sample Location Task.	See page A-101.
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Home Liquid Handler This Task homes the specified liquid handler.	See page A-103.
235 Autoinjector Tasks Table *(Page 2 of 4)*	

235 Autoinjector Tasks (Continued)

Injection Rinse This Task is used to rinse the injection port. **Note:** This Task must be used with another task as it does not include any move instructions.	See page A-136.
Injection Valve Position This Task sets the injection valve position on the Injector to either LOAD or INJECT.	See page A-71.
Inside Rinse This Task moves to the rinse station and then rinses the inside of the probe.	See page A-137.
Mix With Air This Task aspirates air and then dispenses it into a well at a set height. The aspirate and dispense are repeated several times, if required. The inside and outside of the probe is rinsed.	See page A-140.
Mix with Liquid This Task aspirates liquid and then dispenses it into a well at a set height (several times, if required). The inside and outside of the probe is rinsed.	See page A-148.
Move to Sample Location This Task positions the probe in a specified well in a specified zone at a specified height.	See page A-167.
235 Autoinjector Tasks Table *(Page 3 of 4)*	

235 Autoinjector Tasks (Continued)

Outside Rinse This Task moves to the rinse station and then rinses the outside of the probe.	See page A-169.
Prime Dilutor This Task primes the dilutor in the specified zone. It aspirates the specified amount of volume from the reservoir (or the syringe capacity) and then dispenses to the specified wells. If the volume specified exceeds the syringe capacity, then multiple aspirates and dispenses will be performed to deliver the requested volume.	See page A-172.
Transfer This Task aspirates the specified amount of sample volume from the wells of the source zone and then dispenses to the wells of the result zone. The inside and outside of the probe is rinsed.	See page A-158.
Voltage On - Off This Task opens and powers off or closes and powers on the 24V contact on a specified liquid handler.	See page A-106.
Wait for Contact This Task initiates a wait in the Method until a contact state change is detected of the specified input contact on the specified Instrument.	See page A-45.
235 Autoinjector Tasks Table *(Page 4 of 4)*	

235S Partial Loop Injection

This Task performs a partial loop injection.

Properties

235S Partial Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Autoinjector	The autoinjector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Extra Volume and Injection Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	6 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	6 µL
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min

235S Partial Loop Injection Task Properties Table *(Page 1 of 5)*

235S Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	3 sec
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume and Extra Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom

235S Partial Loop Injection Task Properties Table *(Page 2 of 5)*

235S Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Injection Z Option	One of five defined reference points, selected from a drop-down list, used when injecting the Injection Volume and Extra Volume: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Injection Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset.	Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Extra Volume.	0 mm
Drain Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the dilutor is homed.	Inside Rinse

235S Partial Loop Injection Task Properties Table *(Page 3 of 5)*

235S Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Drain Well	Enter the well number in the Drain Zone.	1
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	250 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	3.3 mL/min
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	300 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	3.3 mL/min

235S Partial Loop Injection Task Properties Table *(Page 4 of 5)*

235S Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2

235S Partial Loop Injection Task Properties Table *(Page 5 of 5)*

Sequence of Steps

1 Move Z to top.

2 Set injection valve to INJECT.

3 Move to Drain Well in Drain Zone and lower probe into well.

4 Home dilutor.

5 Move Z to top.

ASPIRATE

1 Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.

2 Move to Sample Well in Sample Zone.

3 Lower probe into well to Sample Z Option and Sample Z Offset.

4 Switch dilutor valve to probe and aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.

5 Move Z to top.

INJECT

1 Move to Injection Well in Injection Zone.

2 Lower probe into well to Injection Z Option and Injection Z Offset.

3 Dispense Extra Volume at Dispense Flow Rate.

4 Switch injection valve to LOAD.

5 Wait 1.2 sec.

6 Dispense Injection Volume at Dispense Flow Rate.

7 Wait Injection Equilibration Time.

8 Synchronize.

INJECTION PORT RINSE

1 Switch injection valve to INJECT.

2 Home dilutor.

3 Switch dilutor valve to reservoir.

4 Aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

5 Switch dilutor valve to probe.

6 Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

7 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

8 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

235S Total Loop Injection

This Task performs a total loop injection.

Properties

235S Total Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Autoinjector	The autoinjector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	3 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	6 µL
Loop Volume Overfill	A factor to multiply the Loop Volume by that determines the injection volume. Injection Volume = Loop Volume Overfill x Loop Volume.	5

235S Total Loop Injection Task Properties Table *(Page 1 of 5)*

235S Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Loop Volume	The capacity of the installed sample loop.	0
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	3 sec
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume and Extra Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom

235S Total Loop Injection Task Properties Table *(Page 2 of 5)*

235S Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Injection Z Option	One of five defined reference points, selected from a drop-down list, used when injecting the Injection Volume and Extra Volume: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Injection Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset.	Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Extra Volume.	0 mm

235S Total Loop Injection Task Properties Table *(Page 3 of 5)*

235S Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Drain Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	250 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	3.3 mL/min
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	300 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	3.3 mL/min

235S Total Loop Injection Task Properties Table *(Page 4 of 5)*

235S Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

235S Total Loop Injection Task Properties Table *(Page 5 of 5)*

Sequence of Steps

1 Move Z to top.

2 Set injection valve to INJECT.

3 Move to Drain Well in Drain Zone and lower probe into well.

4 Home dilutor.

5 Move Z to top.

ASPIRATE

1 Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.

2 Move to Sample Well in Sample Zone.

3 Lower probe into well to Sample Z Option and Sample Z Offset.

4 Aspirate the injection volume (injection volume = Loop Overfill x Loop Volume) + Extra Volume at Aspirate Flow Rate.

5 Move Z to top.

INJECT

1 Move to Injection Well in Injection Zone.

2 Lower probe into well to Injection Z Option and Injection Z Offset.

3 Switch injection valve to LOAD.

4 Wait 1.2 sec.

5 Dispense the injection volume (injection volume = Loop Overfill x Loop Volume) at Dispense Flow Rate.

6 Wait Injection Equilibration Time.

7 Synchronize.

INJECTION PORT RINSE

1 Switch injection valve to INJECT.

2 Home dilutor.

3 Switch dilutor valve to reservoir.

4 Aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

5 Switch dilutor valve to probe.

6 Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

7 Repeat steps 3–6 until requested rinse volume is aspirated and dispensed.

8 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

235T Injection Rinse

This Task is used to rinse the injection port on a 235 Autoinjector with tee injection port.

Note: This Task must be used with another task as it does not include any move instructions.

Properties

235T Injection Rinse Task Properties

Property Name	*Description*	*Default Value*
Autoinjector	The autoinjector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Rinse Volume	The quantity of liquid dispensed.	250 µL
Above Seal Rinse Volume	The quantity of liquid dispensed above the seal.	250 µL
Rinse Flow Rate	The speed at which the Rinse Volume moves out of the probe and into the injection port.	3.3 mL/min

235T Injection Rinse Task Properties

235T Partial Loop Injection

This Task performs a partial loop injection on a 235 Autoinjector with a tee injection port.

Properties

235T Partial Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Autoinjector	The autoinjector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Extra Volume and Injection Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	6 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	6 µL
Injection Volume	The volume of sample to be injected.	0 µL

235T Partial Loop Injection Task Properties Table *(Page 1 of 5)*

235T Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	3 sec
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume and Extra Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom

235T Partial Loop Injection Task Properties Table *(Page 2 of 5)*

235T Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Injection Z Option	One of five defined reference points, selected from a drop-down list, used when injecting the Injection Volume and Extra Volume: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Injection Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset.	Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Extra Volume.	0 mm
Drain Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the dilutor is homed.	Inside Rinse

235T Partial Loop Injection Task Properties Table *(Page 3 of 5)*

235T Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Drain Well	Enter the well number in the Drain Zone.	1
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	200 µL
Above Seal Rinse Volume	The quantity of liquid dispensed above the seal.	200
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	3.3 mL/min
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	200 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	3.3 mL/min

235T Partial Loop Injection Task Properties Table *(Page 4 of 5)*

235T Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2

235T Partial Loop Injection Task Properties Table *(Page 5 of 5)*

Sequence of Steps

1 Move Z to top.

2 Set injection valve to INJECT.

3 Move to Drain Well in Drain Zone and lower probe into well.

4 Home dilutor.

5 Move Z to top.

ASPIRATE

1 Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.

2 Move to Sample Well in Sample Zone.

3 Lower probe into well to Sample Z Option and Sample Z Offset.

4 Switch dilutor valve to probe and aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.

5 Move Z to top.

INJECT

1 Move to Injection Well in Injection Zone.

2 Lower probe into well to Injection Z Option and Injection Z Offset.

3 Dispense Extra Volume at Dispense Flow Rate.

4 Switch injection valve to LOAD.

5 Wait 1.2 sec.

6 Dispense Injection Volume at Dispense Flow Rate.

7 Wait Injection Equilibration Time.

8 Synchronize.

TEE INJECTION PORT RINSE

1 Switch injection valve to INJECT.

2 Home dilutor.

3 Switch dilutor valve to reservoir.

4 Aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

5 Switch dilutor valve to probe.

6 Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

7 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

ABOVE SEAL RINSE

1 Raise probe to 5 mm above bottom of injection port.

2 Home dilutor.

3 Switch dilutor valve to reservoir.

4 Aspirate Above Seal Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

5 Switch dilutor valve to probe.

6 Dispense Above Seal Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

7 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

8 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

235T Total Loop Injection

This Task performs a total loop injection on a 235 Autoinjector with tee injection port.

Properties

235T Total Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Autoinjector	The autoinjector, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	6 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	6 µL
Loop Volume Overfill	A factor to multiply the Loop Volume by that determines the injection volume. Injection Volume = Loop Volume Overfill x Loop Volume.	5

235T Total Loop Injection Task Properties Table *(Page 1 of 5)*

235T Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Loop Volume	The capacity of the installed sample loop.	0
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	0.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	0.3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	0.3 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	3 sec
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume and Extra Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom

235T Total Loop Injection Task Properties Table *(Page 2 of 5)*

235T Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Injection Z Option	One of five defined reference points, selected from a drop-down list, used when injecting the Injection Volume and Extra Volume: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Injection Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset.	Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option used when injecting the Injection Volume and Extra Volume.	0 mm

235T Total Loop Injection Task Properties Table *(Page 3 of 5)*

235T Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Drain Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	250 µL
Above Seal Rinse Volume	The quantity of liquid dispensed above the seal.	250 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	3.3 mL/min
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Well	Enter the well number in the Outside Rinse Zone.	1
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	300 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	3.3 mL/min

235T Total Loop Injection Task Properties Table *(Page 4 of 5)*

235T Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

235T Total Loop Injection Task Properties Table *(Page 5 of 5)*

Sequence of Steps

1 Move Z to top.

2 Set injection valve to INJECT.

3 Move to Drain Well in Drain Zone and lower probe into well.

4 Home dilutor.

5 Move Z to top.

ASPIRATE

1 Switch dilutor valve to probe and aspirate Air Gap Volume at Air Gap Flow Rate.

2 Move to Sample Well in Sample Zone.

3 Lower probe into well to Sample Z Option and Sample Z Offset.

4 Aspirate the injection volume (injection volume = Loop Overfill x Loop Volume) + Extra Volume at Aspirate Flow Rate.

5 Move Z to top.

INJECT

1 Move to Injection Well in Injection Zone.

2 Lower probe into well to Injection Z Option and Injection Z Offset.

3 Switch injection valve to LOAD.

4 Wait 1.2 sec.

5 Dispense the injection volume (injection volume = Loop Overfill x Loop Volume) at Dispense Flow Rate.

6 Wait Injection Equilibration Time.

7 Synchronize.

TEE INJECTION PORT RINSE

1 Switch injection valve to INJECT.

2 Home dilutor.

3 Switch dilutor valve to reservoir.

4 Aspirate Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

5 Switch dilutor valve to probe.

6 Dispense Injection Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

7 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

ABOVE SEAL RINSE

1 Raise probe to 5 mm above bottom of injection port.

2 Home dilutor.

3 Switch dilutor valve to reservoir.

4 Aspirate Above Seal Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

5 Switch dilutor valve to probe.

6 Dispense Above Seal Rinse Volume or syringe capacity at Injection Rinse Flow Rate.

7 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

8 Move Z to top.

OUTSIDE RINSE

1 Move to Outside Rinse Well in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Home dilutor.

4 Switch dilutor valve to reservoir.

5 Aspirate Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

6 Switch dilutor valve to probe.

7 Dispense Outside Rinse Volume or syringe capacity at Outside Rinse Flow Rate.

8 Repeat steps 4–7 until requested rinse volume is aspirated and dispensed.

GX-281 Liquid Handler Tasks

The table below lists the tasks for the GX-281 Liquid handler.

GX-281 Liquid Handler Tasks

Gilson Task Name and Description	*For detailed information:*
Voltage On - Off This Task opens and powers off or closes and powers on the 24V contact on a specified liquid handler.	See page A-106.
Aspirate This Task aspirates an air gap or draws liquid from the bed or aspirates liquid from the reservoir. If drawing liquid from the bed, this Task must be used in conjunction with the Move to Sample Location Task.	See page A-99.
Collection and Travel Depth This Task customizes probe (used as a dispense needle) movement during fraction collection.	See page A-26.
Contact Open-Close This Task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.	See page A-467.
Dispense This Task delivers liquid or air and must be used in conjunction with the Move to Sample Location Task.	See page A-101.
GX-281 Liquid Handler Tasks Table *(Page 1 of 6)*	

GX-281 Liquid Handler Tasks (Continued)

Fraction Collection Settings This Task sets all parameters for fraction collection.	See page A-27.
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
GX Add Diluent This Task aspirates the specified amount of diluent volume and then dispenses to the Sample Zone.	See page A-278.
GX Dilute This Task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. The Task next aspirates sample from the wells of the sample zone and then dispenses again to the result zone. If any extra volume of the diluent is aspirated, it is dispensed with the air gap in the drain. If no extra volume of diluent is aspirated then the air gap is dispensed 1/2 to the drain and 1/2 to result. An optional mix with liquid or air is included in this Task. The inside and outside of the probe is rinsed.	See page A-295.
GX Home Liquid Handler This Task homes the GX-281 Liquid Handler, when specified.	See page A-315.
GX-281 Liquid Handler Tasks Table *(Page 2 of 6)*	

GX-281 Liquid Handler Tasks (Continued)

GX Injection Rinse This Task is used to rinse the injection port. **Note:** This Task must be used with another task as it does not include any move instructions.	See page A-319.
GX Inside Rinse This Task moves to the rinse station and then rinses the inside of the probe.	See page A-320.
GX Mix With Air This Task aspirates air and then dispenses it into a well at a set height. The aspirate and dispense are repeated several times, if required. The inside and outside of the probe is rinsed.	See page A-324.
GX Mix with Liquid Task aspirates liquid and then dispenses it into a well at a set height (several times, if required). The inside and outside of the probe is rinsed.	See page A-337.
GX Outside Rinse This Task moves to the rinse station and then rinses the outside of the probe.	See page A-350.
GX Prime This Task moves to the rinse station and then primes the transfer tubing with reservoir solvent.	See page A-358.
GX-281 Liquid Handler Tasks Table *(Page 3 of 6)*	

GX-281 Liquid Handler Tasks (Continued)

GX Transfer This Task aspirates the specified amount of sample volume from the wells of the source zone and then dispenses to the wells of the result zone. If any extra volume of the source is aspirated, it is dispensed with the air gap in the drain. If no extra volume of solution is aspirated then the air gap is dispensed in the result. The inside and outside of the probe is rinsed.	See page A-361.
GX-281 Low Volume Partial Loop Injection This Task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.	See page A-378.
GX-281 Partial Loop Injection This Task performs a partial loop injection.	See page A-392.
GX-281 Prep Injection with Collection This Task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes rinse of the low pressure fraction collection valve.	See page A-404.
GX-281 Rack Scan This Task scans the racks on the locator plate of the Liquid Handler specified (currently only available for the GX-281 Liquid Handler) for the purpose of ensuring that the rack hardware setup matches the software rack (Bed Layout) setup.	See page A-417.
GX-281 Liquid Handler Tasks Table *(Page 4 of 6)*	

GX-281 Liquid Handler Tasks (Continued)

GX-281 Total Loop Injection This Task performs a total loop injection.	See page A-418.
GX-281 Z Inject Prep Injection This Task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop.	See page A-431.
GX-281 Z Inject Prep Injection with Collection This Task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop and also rinses the low pressure fraction collection valve.	See page A-443.
Injection Valve Position This Task sets the injection valve position on the Injector to either LOAD or INJECT.	See page A-71.
Move to Sample Location This Task positions the probe in a specified well in a specified zone at a specified height.	See page A-167.
Set Fraction Site This Task identifies where fraction collection will begin for an injected sample.	See page A-34.
Set Multiple Bed Collection This Task is used to set the fraction site when multiple fraction collectors are being used.	See page A-35.
Set Non Peak Per Tube This Task sets parameters for collecting non-peaks.	See page A-37.
GX-281 Liquid Handler Tasks Table *(Page 5 of 6)*	

GX-281 Liquid Handler Tasks (Continued)

Set Peak Level This Task sets the parameters for fraction collection by level.	See page A-38.
Set Peak Per Tube This Task sets parameters for collecting peaks.	See page A-39.
Set Peak Slope This Task sets the parameters for fraction collection by slope.	See page A-40.
Start Fraction Collection This Task tells Trilution LC to begin collecting fractions. This Task has no properties to set.	See page A-43.
Stop Fraction Collection This Task tells Trilution LC to stop collecting fractions. This Task has no properties to set.	See page A-44.
Wait for Contact This Task initiates a wait in the Method until a contact state change is detected of the specified input contact on the specified Instrument.	See page A-45.
Write to Display This Task displays a message in the front panel display of the selected instrument.	See page A-175.
GX-281 Liquid Handler Tasks Table *(Page 6 of 6)*	

GX Add Diluent

This Task aspirates the specified amount of diluent volume and then dispenses to the Sample Zone.

Properties

GX Add Diluent Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Diluent Source	Select PROBE or RESERVOIR.	RESERVOIR
Diluent Zone	Used only if PROBE is selected; the zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Diluent Volume is aspirated.	Sample Zone
Diluent Well	Used only if PROBE is selected; enter the well number in the Diluent Zone.	0
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Diluent Volume is delivered.	
Sample Well	Enter the well number in the Sample Zone.	0

GX Add Diluent Task Properties Table *(Page 1 of 12)*

GX Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Diluent Volume	The quantity of liquid used to dilute the sample volume in the Sample Well in the Sample Zone.	0 µL
Air Gap Volume	The quantity of an air gap.	50 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	1.5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min

GX Add Diluent Task Properties Table *(Page 2 of 12)*

GX Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Aspirate Z Option	Used only when PROBE is selected; one of five defined reference points, selected from a drop-down list, used when aspirating the Diluent Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Aspirate Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Aspirate Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Aspirate Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset.	Bottom
Aspirate Z Offset	Used only when PROBE is selected; the distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Aspirate Z Option used when aspirating the Diluent Volume from the bed.	2 mm

GX Add Diluent Task Properties Table *(Page 3 of 12)*

GX Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Aspirate LLF	Used only when PROBE is selected; select TRUE and the probe will follow the liquid down as it is aspirated from the Diluent Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Diluent Zone.	FALSE
Dispense Z Option	One of five defined reference points, selected from a drop-down list, used when delivering the Diluent Volume to the bed: **Auto Calculate:** laces probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Dispense Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Dispense Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset.	Bottom

GX Add Diluent Task Properties Table *(Page 4 of 12)*

GX Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Dispense Z Option used when delivering the Diluent Volume to the bed.	2 mm
Dispense LLF	Select TRUE and the probe will follow the liquid up as it is delivered to the Sample Zone. The Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid up as it is delivered to the Sample Zone.	FALSE
Mix	Select TRUE to perform a mix of the Diluent Volume with the Sample Volume (and optionally with air too). Select FALSE for no mixing.	FALSE
Mix with Liquid	Used only if MIX=TRUE selected; select TRUE to mix with liquid or select FALSE to mix with air.	TRUE
Number of Cycles	Used only if MIX=TRUE selected; type the number of times the Task should repeat the commands related to mixing.	2
Mixing Volume	Used only if MIX=TRUE selected; the quantity of liquid or air used as part of a mixing process.	0 µL
Mix Aspirate Flow Rate	Used only if MIX=TRUE selected; the speed at which volumes move into the probe during the mixing process.	1 mL/min
Mix Dispense Flow Rate	Used only if MIX=TRUE selected; the speed at which volumes move out of the probe during the mixing process.	10 mL/min

GX Add Diluent Task Properties Table *(Page 5 of 12)*

GX Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Mix Aspirate Z Option	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; one of five defined reference points, selected from a drop-down list, used when aspirating the Mixing Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Mix Aspirate Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Mix Aspirate Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Mix Aspirate Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Aspirate Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Mix Aspirate Z Offset.	Bottom
Mix Aspirate Z Offset	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; the distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Aspirate Z Option used when aspirating the Mixing Volume from the bed.	2 mm

GX Add Diluent Task Properties Table *(Page 6 of 12)*

GX Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Mix Aspirate LLF	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone as part of the mixing process. The Mix Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone as part of the mixing process.	FALSE
Mix Dispense Z Option	Used only if MIX = TRUE and Mix with Liquid = TRUE selected; one of five defined reference points, selected from a drop-down list, used when delivering the Mixing Volume to the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Mix Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Mix Dispense Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Dispense Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset.	Bottom

GX Add Diluent Task Properties Table *(Page 7 of 12)*

GX Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Mix Dispense Z Offset	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; the distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Dispense Z Option used when delivering the Mixing Volume to the bed.	2 mm
Mix Dispense LLF	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; select TRUE and the probe will follow the liquid up as it is delivered to the Sample Zone as part of the mixing process. The Mix Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid up as it is delivered to the Sample Zone as part of the mixing process.	FALSE
Inside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1 For information on rinse positions, see ***Appendix B, Rinse Locations***.

GX Add Diluent Task Properties Table *(Page 8 of 12)*

GX Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Inside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the inside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Inside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset.	Tube Top
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	-7 mm

GX Add Diluent Task Properties Table *(Page 9 of 12)*

GX Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse For information on rinse positions, see ***Appendix B, Rinse Locations***.
Number of Rinse Stations	Enter the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2

GX Add Diluent Task Properties Table *(Page 10 of 12)*

GX Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

GX Add Diluent Task Properties Table *(Page 11 of 12)*

GX Add Diluent Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX Add Diluent Task Properties Table *(Page 12 of 12)*

Sequence of Steps

ASPIRATE

1 Move Z to top.

2 If Diluent Source = PROBE, move to Diluent Well in Diluent Zone. If Diluent Source = RESERVOIR, switch solvent valve to Solvent Valve Position.

3 If Diluent Source = PROBE, switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.

4 If Diluent Source = PROBE, lower probe to Aspirate Z Option and Aspirate Z Offset.

5 If Diluent Source = PROBE, aspirate Diluent Volume at Aspirate Flow Rate.

6 If Diluent Source = PROBE, move Z to top.

DISPENSE

1 Move to Sample Well in Sample Zone.

2 Lower probe to Dispense Z Option and Dispense Z Offset.

3 If Diluent Source = PROBE, switch solvent valve to Solvent Valve Position.

4 Dispense Diluent Volume at Dispense Flow Rate.

5 Move Z to top.

DRAIN

1 Move to Inside Rinse Well in Inside Rinse Zone.

2 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.

3 If Diluent Source = PROBE, dispense 1/2 Air Gap Volume at Inside Rinse Flow Rate.

MIX (OPTIONAL)

1 If Mix = TRUE

   a) Move Z to top.

   b) If Mix with Liquid = TRUE, switch solvent valve to waste and then aspirate Air Gap Volume at Air Gap Flow Rate.

   c) Move to Sample Well in Sample Zone.

   d) If Mix with Liquid = TRUE, lower probe to Mix Aspirate Z Option and Mix Aspirate Z Offset. If Mix with Liquid = FALSE, move Z to top.

   e) Switch solvent valve to waste.

   f) If Mix with Liquid = FALSE, aspirate Air Gap Volume at Air Gap Flow Rate (first cycle only).

   g) Aspirate Mixing Volume at Mix Aspirate Flow Rate.

   h) Lower probe to Mix Dispense Z Option and Mix Dispense Z Offset.

   i) Switch solvent valve to Solvent Valve Position.

   j) Dispense Mixing Volume at Mix Dispense Flow Rate.

   k) Repeat steps d–j for Number of Cycles.

2 Move Z to top.

INSIDE RINSE

1 Move to Inside Rinse Well in Inside Rinse Zone.

2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

3 Switch solvent valve to Solvent Valve Position.

4 Dispense volume held by transfer tubing at 10 mL/min.

5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate.

6 Move Z to top.

OUTSIDE RINSE

1 Move to rinse station/well 1 in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Switch Rinse Pump on at Rinse Pump Speed.

4 Switch solvent valve to Rinse Well 1 Solvent Valve Position.

5 If Rinse Well 1 Solvent Valve Position = Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 1 Solvent Valve Position is not equal to the Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

6 If Number of Rinse Stations = 2, perform steps 7–10 and step 23.

If Number of Rinse Stations = 3, perform steps 7–14 and step 23.

If Number of Rinse Stations = 4, perform steps 7–18 and step 23.

If Number of Rinse Stations = 5, perform all remaining steps.

7 Move to rinse station/well 2 in Outside Rinse Zone.

8 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

9 Switch solvent valve to Rinse Well 2 Solvent Valve Position.

10 If Rinse Well 2 Solvent Valve Position = Rinse Well 1 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 2 Solvent Valve Position is not equal to the Rinse Well 1 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

11 Move to rinse station/well 3 in Outside Rinse Zone.

12 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

13 Switch solvent valve to Rinse Well 3 Solvent Valve Position.

14 If Rinse Well 3 Solvent Valve Position = Rinse Well 2 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 3 Solvent Valve Position is not equal to the Rinse Well 2 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

15 Move to rinse station/well 4 in Outside Rinse Zone.

16 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

17 Switch solvent valve to Rinse Well 4 Solvent Valve Position.

18 If Rinse Well 4 Solvent Valve Position = Rinse Well 3 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 4 Solvent Valve Position is not equal to the Rinse Well 3 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

19 Move to rinse station/well 5 in Outside Rinse Zone.

20 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

21 Switch solvent valve to Rinse Well 5 Solvent Valve Position.

22 If Rinse Well 5 Solvent Valve Position = Rinse Well 4 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 5 Solvent Valve Position is not equal to the Rinse Well 4 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

23 Switch Rinse Pump OFF.

GX Dilute

This Task aspirates the specified amount of diluent volume from the reservoir or the bed and then dispenses to result. The Task next aspirates sample from the wells of the sample zone and then dispenses again to the result zone.

If any extra volume of the diluent is aspirated, it is dispensed with the air gap in the drain. If no extra volume of diluent is aspirated then the air gap is dispensed 1/2 to the drain and 1/2 to result.

An optional mix with liquid or air is included in this Task.

The inside and outside of the probe is rinsed.

Properties

GX Dilute Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2

GX Dilute Task Properties Table *(Page 1 of 15)*

GX Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Diluent Source	Select PROBE or RESERVOIR.	RESERVOIR
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Sample Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Diluent Zone	Used only if PROBE is selected; the zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Diluent Volume is aspirated.	
Diluent Well	Used only if PROBE is selected; enter the well number in the Diluent Zone.	0
Result Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Sample Volume and Diluent Volume are delivered.	
Result Well	Enter the well number in the Result Zone.	0
Air Gap Volume	The quantity of an air gap.	50 µL
Sample Volume	The quantity of sample.	0 µL
Diluent Volume	The quantity of liquid used to dilute the sample volume in the Sample Well in the Sample Zone.	0 µL
Diluent Extra Volume	Used only if PROBE is selected; an additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated and acts as an extra buffer between the air gap/reservoir solvent and the Diluent Volume.	0 µL

GX Dilute Task Properties Table *(Page 2 of 15)*

GX Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Flow Rate	The speed at which the Sample Volume moves into the probe.	1.5 mL/min
Diluent Flow Rate	The speed at which the Diluent Volume moves into the probe.	1.5 mL/min
Result Flow Rate	The speed at which the Sample Volume, Diluent Volume, and Air Gap Volume moves out of the probe.	3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Sample Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Sample Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom

GX Dilute Task Properties Table *(Page 3 of 15)*

GX Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Sample Volume from the bed.	2 mm
Aspirate Sample LLF	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE

GX Dilute Task Properties Table *(Page 4 of 15)*

GX Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Diluent Z Option	Used only when PROBE is selected; one of five defined reference points, selected from a drop-down list, used when aspirating the Diluent Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Diluent Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Diluent Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Diluent Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Diluent Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Diluent Z Offset.	Bottom
Diluent Z Offset	Used only when PROBE is selected; the distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Diluent Z Option used when aspirating the Diluent Volume from the bed.	2 mm

GX Dilute Task Properties Table *(Page 5 of 15)*

GX Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Aspirate Diluent LLF	Used only when PROBE is selected; select TRUE and the probe will follow the liquid down as it is aspirated from the Diluent Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Diluent Zone.	FALSE
Result Z Option	One of five defined reference points, selected from a drop-down list, used when delivering the Diluent Volume, Sample Volume, and Air Gap Volume to the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Result Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Result Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Result Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Result Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Result Z Offset.	Bottom

GX Dilute Task Properties Table *(Page 6 of 15)*

GX Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Result Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Result Z Option used when delivering the Diluent Volume, Sample Volume, and Air Gap Volume to the bed.	2 mm
Dispense LLF	Select TRUE and the probe will follow the liquid up as it is delivered to the Result Zone. The Result Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid up as it is delivered to the Result Zone.	FALSE
Mix	Select TRUE to perform a mix of the Diluent Volume with the Sample Volume (and optionally with air too). Select FALSE for no mixing.	FALSE
Mix with Liquid	Used only if MIX=TRUE selected; select TRUE to mix with liquid or select FALSE to mix with air.	TRUE
Number of Cycles	Used only if MIX=TRUE selected; type the number of times the Task should repeat the commands related to mixing.	2
Mixing Volume	Used only if MIX=TRUE selected; the quantity of liquid or air used as part of a mixing process.	0 µL
Mix Aspirate Flow Rate	Used only if MIX=TRUE selected; the speed at which volumes move into the probe during the mixing process.	1 mL/min

GX Dilute Task Properties Table *(Page 7 of 15)*

GX Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Mix Dispense Flow Rate	Used only if MIX=TRUE selected; the speed at which volumes move out of the probe during the mixing process.	10 mL/min
Mix Aspirate Z Option	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; one of five defined reference points, selected from a drop-down list, used when aspirating the Mixing Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Mix Aspirate Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Mix Aspirate Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Mix Aspirate Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Aspirate Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Mix Aspirate Z Offset.	Bottom

GX Dilute Task Properties Table *(Page 8 of 15)*

GX Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Mix Aspirate Z Offset	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; the distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Aspirate Z Option used when aspirating the Mixing Volume from the bed.	2 mm
Mix Aspirate LLF	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone as part of the mixing process. The Mix Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone as part of the mixing process.	FALSE

GX Dilute Task Properties Table *(Page 9 of 15)*

GX Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Mix Dispense Z Option	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; one of five defined reference points, selected from a drop-down list, used when delivering the Mixing Volume to the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Mix Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Mix Dispense Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Mix Dispense Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Mix Dispense Z Offset.	Bottom
Mix Dispense Z Offset	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; the distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Mix Dispense Z Option used when delivering the Mixing Volume to the bed.	2 mm

GX Dilute Task Properties Table *(Page 10 of 15)*

GX Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Mix Dispense LLF	Used only if MIX=TRUE and Mix with Liquid = TRUE selected; select TRUE and the probe will follow the liquid up as it is delivered to the Sample Zone as part of the mixing process. The Mix Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid up as it is delivered to the Sample Zone as part of the mixing process.	FALSE
Inside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1 For information on rinse positions, see ***Appendix B, Rinse Locations***.
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

GX Dilute Task Properties Table *(Page 11 of 15)*

GX Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Inside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the inside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset.	Tube Top
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	-7 mm

GX Dilute Task Properties Table *(Page 12 of 15)*

GX Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse For information on rinse positions, see ***Appendix B, Rinse Locations***.
Number of Rinse Stations	Enter the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2

GX Dilute Task Properties Table *(Page 13 of 15)*

GX Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

GX Dilute Task Properties Table *(Page 14 of 15)*

GX Dilute Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX Dilute Task Properties Table *(Page 15 of 15)*

Sequence of Steps

1 Move Z to top.

2 If Diluent Source = PROBE, move to Diluent Well in Diluent Zone. If Diluent Source = RESERVOIR, switch solvent valve to Solvent Valve Position.

3 If Diluent Source = PROBE, switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.

4 If Diluent Source = PROBE, lower probe to Aspirate Z Option and Aspirate Z Offset.

5 If Diluent Source = PROBE, aspirate Diluent Volume + Diluent Extra Volume at Diluent Flow Rate.

6 If Diluent Source = PROBE, move Z to top.

7 If Diluent Source = RESERVOIR, move to Result Well in Result Zone.

8 If Diluent Source = RESERVOIR, lower probe to Result Z Option and Result Z Offset.

9 If Diluent Source = RESERVOIR, dispense Diluent Volume at Result Flow Rate.

10 If Diluent Source = RESERVOIR, move Z to top.

11 Switch solvent valve to waste.

12 Aspirate Air Gap Volume at Air Gap Flow Rate.

13 Move to Sample Well in Sample Zone.

14 Lower probe to Sample Z Option and Sample Z Offset.

15 Aspirate Sample Volume at Sample Flow Rate.

16 Move Z to top.

17 Move to Result Well in Result Zone.

18 Lower probe to Result Z Option and Result Z Offset.

19 Switch solvent valve to Solvent Valve Position.

20 If Diluent Source = RESERVOIR, dispense Sample Volume at Result Flow Rate. If Diluent Source = PROBE, dispense Sample Volume + Air Gap Volume + Diluent Volume at Result Flow Rate.

21 Move Z to top.

DRAIN

1 Move to Inside Rinse Well in Inside Rinse Zone.

2 Lower probe to Inside Rinse Z Option and Inside Rinse Z Offset.

3 If Diluent Source = RESERVOIR, dispense Air Gap Volume at Inside Rinse Flow Rate. If Diluent Source = PROBE, dispense Diluent Extra Volume + Air Gap Volume at Inside Rinse Flow Rate.

MIX (OPTIONAL)

1 If Mix = TRUE

   a) Move Z to top.

   b) If Mix with Liquid = TRUE, switch solvent valve to waste and then aspirate Air Gap Volume at Air Gap Flow Rate.

   c) Move to Result Well in Result Zone.

   d) If Mix with Liquid = TRUE, lower probe to Mix Aspirate Z Option and Mix Aspirate Z Offset. If Mix with Liquid = FALSE, move Z to top.

   e) Switch solvent valve to waste.

f) If Mix with Liquid = FALSE, aspirate Air Gap Volume at Air Gap Flow Rate (first cycle only).

g) Aspirate Mixing Volume at Mix Aspirate Flow Rate.

h) Lower probe to Mix Dispense Z Option and Mix Dispense Z Offset.

i) Switch solvent valve to Solvent Valve Position.

j) Dispense Mixing Volume at Mix Dispense Flow Rate.

k) Repeat steps d–j for Number of Cycles.

2 Move Z to top.

INSIDE RINSE

1 Move to Inside Rinse Well in Inside Rinse Zone.

2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

3 Switch solvent valve to Solvent Valve Position.

4 Dispense volume held by transfer tubing at 10 mL/min.

5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate.

6 Move Z to top.

OUTSIDE RINSE

1 Move to rinse station/well 1 in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Switch Rinse Pump on at Rinse Pump Speed.

4 Switch solvent valve to Rinse Well 1 Solvent Valve Position.

5 If Rinse Well 1 Solvent Valve Position = Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

   If Rinse Well 1 Solvent Valve Position is not equal to the Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

6 If Number of Rinse Stations = 2, perform steps 7–10 and step 23.

   If Number of Rinse Stations = 3, perform steps 7–14 and step 23.

   If Number of Rinse Stations = 4, perform steps 7–18 and step 23.

   If Number of Rinse Stations = 5, perform all remaining steps.

7 Move to rinse station/well 2 in Outside Rinse Zone.

8 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

9 Switch solvent valve to Rinse Well 2 Solvent Valve Position.

10 If Rinse Well 2 Solvent Valve Position = Rinse Well 1 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

   If Rinse Well 2 Solvent Valve Position is not equal to the Rinse Well 1 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

11 Move to rinse station/well 3 in Outside Rinse Zone.

12 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

13 Switch solvent valve to Rinse Well 3 Solvent Valve Position.

14 If Rinse Well 3 Solvent Valve Position = Rinse Well 2 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 3 Solvent Valve Position is not equal to the Rinse Well 2 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

15 Move to rinse station/well 4 in Outside Rinse Zone.

16 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

17 Switch solvent valve to Rinse Well 4 Solvent Valve Position.

18 If Rinse Well 4 Solvent Valve Position = Rinse Well 3 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 4 Solvent Valve Position is not equal to the Rinse Well 3 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

19 Move to rinse station/well 5 in Outside Rinse Zone.

20 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

21 Switch solvent valve to Rinse Well 5 Solvent Valve Position.

22 If Rinse Well 5 Solvent Valve Position = Rinse Well 4 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 5 Solvent Valve Position is not equal to the Rinse Well 4 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

23 Switch Rinse Pump OFF.

GX Home Liquid Handler

This Task homes the GX-281 Liquid Handler, when specified.

Properties

GX Home Liquid Handler Task Properties

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the associated configuration, that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2

GX Home Liquid Handler Task Properties Table *(Page 1 of 4)*

GX Home Liquid Handler Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, at which the Dilutor is homed.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1 For information on rinse positions, see ***Appendix B, Rinse Locations***.

GX Home Liquid Handler Task Properties Table *(Page 2 of 4)*

GX Home Liquid Handler Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Z Option	One of five defined reference points, selected from a drop-down list, used when performing the move: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Z Offset.	Bottom

GX Home Liquid Handler Task Properties Table *(Page 3 of 4)*

GX Home Liquid Handler Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Z Option.	2 mm

GX Home Liquid Handler Task Properties Table *(Page 4 of 4)*

Sequence of Steps

1 Home the X/Y/Z of the Liquid Handler.
2 Home Rinse Pump.
3 Move the probe to Inside Rinse Zone.
4 Lower probe to Z Option and Z Offset.
5 Switch solvent valve to Solvent Valve Position.
6 Dispense volume held by transfer tubing at 10 mL/min.
7 Move Z to top.

GX Injection Rinse

This Task is used to rinse the injection port.

Note: This Task must be used with another task as it does not include any move instructions.

Properties

GX Injection Rinse Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the associated configuration, that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Volume	The quantity of liquid dispensed.	1000 µL
Rinse Flow Rate	The speed at which the Rinse Volume moves out of the probe and into the injection port.	10 mL/min

GX Injection Rinse Task Properties

GX Inside Rinse

This Task moves to the rinse station and then rinses the inside of the probe.

Properties

GX Inside Rinse Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Inside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1 For information on rinse positions, see ***Appendix B, Rinse Locations***.

GX Inside Rinse Task Properties Table *(Page 1 of 3)*

GX Inside Rinse Task Properties

Property Name	*Description*	*Default Value*
Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Rinse Flow Rate	The speed at which the Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	3 mL/min

GX Inside Rinse Task Properties Table *(Page 2 of 3)*

GX Inside Rinse Task Properties

Property Name	*Description*	*Default Value*
Inside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the inside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Inside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset.	Tube Top
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	-7 mm

GX Inside Rinse Task Properties Table *(Page 3 of 3)*

Sequence of Steps

1 Move Z to top.

2 Move to Inside Rinse Well in Inside Rinse Zone.

3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

4 Switch solvent valve to Solvent Valve Position.

5 Dispense volume held by transfer tubing at 10 mL/min.

6 Dispense Rinse Volume at Rinse Flow Rate.

7 Move Z to top.

GX Mix With Air

This Task aspirates air and then dispenses it into a well at a set height. The aspirate and dispense are repeated several times, if required.

The inside and outside of the probe is rinsed.

Properties

GX Mix With Air Task Properties

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the associated configuration, that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2

GX Mix With Air Task Properties Table *(Page 1 of 9)*

GX Mix With Air Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Mixing Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the Mixing Volume is mixed.	
Mixing Well	Enter the well number in the Mixing Zone.	0
Number of Wells to Mix	The number of Mixing Wells to mix.	1
Number of Cycles	Type the number of times the Task should repeat the commands related to mixing.	2
Mixing Volume	The quantity of air used as part of a mixing process.	0
Air Gap Volume	The quantity of an air gap.	50 µL
Aspirate Flow Rate	The speed at which a volume air moves into the probe.	1 mL/min
Dispense Flow Rate	The speed at which a volume of air moves out of the probe.	10 mL/min

GX Mix With Air Task Properties Table *(Page 2 of 9)*

GX Mix With Air Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Dispense Z Option	One of five defined reference points, selected from a drop-down list, used when delivering air to the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Aspirate Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Dispense Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset.	Bottom
Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Dispense Z Option for delivering air to the bed.	2 mm

GX Mix With Air Task Properties Table *(Page 3 of 9)*

GX Mix With Air Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Dispense LLF	Not used.	FALSE
Inside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1 For information on rinse positions, see ***Appendix B, Rinse Locations***.
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

GX Mix With Air Task Properties Table *(Page 4 of 9)*

GX Mix With Air Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the inside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset.	Tube Top
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	-7 mm

GX Mix With Air Task Properties Table *(Page 5 of 9)*

GX Mix With Air Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse For information on rinse positions, see ***Appendix B, Rinse Locations***.
Number of Rinse Stations	Enter the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2

GX Mix With Air Task Properties Table *(Page 6 of 9)*

GX Mix With Air Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX Mix With Air Task Properties Table *(Page 7 of 9)*

GX Mix With Air Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

GX Mix With Air Task Properties Table *(Page 8 of 9)*

GX Mix With Air Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX Mix With Air Task Properties Table *(Page 9 of 9)*

Sequence of Steps

MIX

1 Move Z to top.
2 Move to Mixing Well in Mixing Zone.
3 Move Z to top.
4 Switch solvent valve to waste.
5 Aspirate Air Gap Volume at Air Gap Flow Rate (first cycle only).
6 Aspirate Mixing Volume at Aspirate Flow Rate.
7 Lower probe to Dispense Z Option and Dispense Z Offset.
8 Switch solvent valve to Solvent Valve Position.
9 Dispense Mixing Volume at Dispense Flow Rate.
10 Repeat steps 2–9 for Number of Cycles.
11 Move Z to top.

INSIDE RINSE

1 Move to Inside Rinse Well in Inside Rinse Zone.
2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3 Switch solvent valve to Solvent Valve Position.
4 Dispense volume held by transfer tubing at 10 mL/min.
5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate.
6 Move Z to top.

OUTSIDE RINSE

1 Move to rinse station/well 1 in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Switch Rinse Pump on at Rinse Pump Speed.

4 Switch solvent valve to Rinse Well 1 Solvent Valve Position.

5 If Rinse Well 1 Solvent Valve Position = Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 1 Solvent Valve Position is not equal to the Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

6 If Number of Rinse Stations = 2, perform steps 7–10 and step 23 and 24.

If Number of Rinse Stations = 3, perform steps 7–14 and step 23 and 24.

If Number of Rinse Stations = 4, perform steps 7–18 and step 23 and 24.

If Number of Rinse Stations = 5, perform all remaining steps.

7 Move to rinse station/well 2 in Outside Rinse Zone.

8 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

9 Switch solvent valve to Rinse Well 2 Solvent Valve Position.

10 If Rinse Well 2 Solvent Valve Position = Rinse Well 1 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 2 Solvent Valve Position is not equal to the Rinse Well 1 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

11 Move to rinse station/well 3 in Outside Rinse Zone.

12 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

13 Switch solvent valve to Rinse Well 3 Solvent Valve Position.

14 If Rinse Well 3 Solvent Valve Position = Rinse Well 2 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 3 Solvent Valve Position is not equal to the Rinse Well 2 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

15 Move to rinse station/well 4 in Outside Rinse Zone.

16 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

17 Switch solvent valve to Rinse Well 4 Solvent Valve Position.

18 If Rinse Well 4 Solvent Valve Position = Rinse Well 3 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 4 Solvent Valve Position is not equal to the Rinse Well 3 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

19 Move to rinse station/well 5 in Outside Rinse Zone.

20 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

21 Switch solvent valve to Rinse Well 5 Solvent Valve Position.

22 If Rinse Well 5 Solvent Valve Position = Rinse Well 4 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 5 Solvent Valve Position is not equal to the Rinse Well 4 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

23 Switch Rinse Pump OFF.

24 Repeat Number of Wells to Mix.

GX Mix with Liquid

Task aspirates liquid and then dispenses it into a well at a set height (several times, if required).

The inside and outside of the probe is rinsed.

Properties

GX Mix with Liquid Task Properties

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the associated configuration, that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Mixing Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the Mixing Volume is mixed.	
Mixing Well	Enter the well number in the Mixing Zone.	0
Number of Wells to Mix	The number of Mixing Wells to mix.	1

GX Mix with Liquid Task Properties Table *(Page 1 of 9)*

GX Mix with Liquid Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Number of Cycles	Type the number of times the Task should repeat the commands related to mixing.	2
Mixing Volume	The quantity of liquid used as part of a mixing process.	0
Air Gap Volume	The quantity of an air gap.	50 µL
Aspirate Flow Rate	The speed at which the Mixing Volume moves into the probe.	1 mL/min
Dispense Flow Rate	The speed at which the Mixing Volume moves out of the probe.	10 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min

GX Mix with Liquid Task Properties Table *(Page 2 of 9)*

GX Mix with Liquid Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Aspirate Z Option	One of five defined reference points, selected from a drop-down list, used when drawing liquid(s) from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Aspirate Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Aspirate Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Aspirate Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Aspirate Z Offset.	Bottom
Aspirate Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Aspirate Z Option for drawing liquid(s) from the bed.	2 mm

GX Mix with Liquid Task Properties Table *(Page 3 of 9)*

GX Mix with Liquid Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Aspirate LLF	Select TRUE and the probe will follow the liquid down as it is aspirated from the Mixing Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Mixing Zone.	FALSE
Dispense Z Option	One of five defined reference points, selected from a drop-down list, used when delivering liquid(s) to the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Dispense Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Aspirate Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Dispense Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Dispense Z Offset.	Bottom

GX Mix with Liquid Task Properties Table *(Page 4 of 9)*

GX Mix with Liquid Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Dispense Z Option for delivering liquid(s) to the bed.	2
Dispense LLF	Select TRUE and the probe will follow the liquid up as it is delivered to the Mixing Zone. The Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid up as it is delivered to the Mixing Zone.	FALSE
Inside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1 For information on rinse positions, see ***Appendix B, Rinse Locations***.
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

GX Mix with Liquid Task Properties Table *(Page 5 of 9)*

GX Mix with Liquid Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the inside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset.	Tube Top
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	-7 mm

GX Mix with Liquid Task Properties Table *(Page 6 of 9)*

GX Mix with Liquid Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse For information on rinse positions, see ***Appendix B, Rinse Locations***.
Number of Rinse Stations	Enter the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2

GX Mix with Liquid Task Properties Table *(Page 7 of 9)*

GX Mix with Liquid Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

GX Mix with Liquid Task Properties Table *(Page 8 of 9)*

GX Mix with Liquid Task Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX Mix with Liquid Task Properties Table *(Page 9 of 9)*

Sequence of Steps

MIX

1 Move Z to top.
2 Switch solvent valve to waste and then aspirate Air Gap Volume at Air Gap Flow Rate.
3 Move to Result Well in Result Zone.
4 Lower probe to Aspirate Z Option and Aspirate Z Offset.
5 Switch solvent valve to waste.
6 Aspirate Mixing Volume at Mix Aspirate Flow Rate.
7 Lower probe to Mix Dispense Z Option and Mix Dispense Z Offset.
8 Switch solvent valve to Solvent Valve Position.
9 Dispense Mixing Volume at Mix Dispense Flow Rate.
10 Repeat steps 6–9 for Number of Cycles.
11 Move Z to top.

INSIDE RINSE

1 Move to Inside Rinse Well in Inside Rinse Zone.
2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.
3 Switch solvent valve to Solvent Valve Position.
4 Dispense volume held by transfer tubing at 10 mL/min.
5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate.
6 Move Z to top.

OUTSIDE RINSE

1 Move to rinse station/well 1 in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Switch Rinse Pump on at Rinse Pump Speed.

4 Switch solvent valve to Rinse Well 1 Solvent Valve Position.

5 If Rinse Well 1 Solvent Valve Position = Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 1 Solvent Valve Position is not equal to the Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

6 If Number of Rinse Stations = 2, perform steps 7–10 and steps 23 and 24.

If Number of Rinse Stations = 3, perform steps 7–14 and steps 23 and 24.

If Number of Rinse Stations = 4, perform steps 7–18 and steps 23 and 24.

If Number of Rinse Stations = 5, perform all remaining steps.

7 Move to rinse station/well 2 in Outside Rinse Zone.

8 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

9 Switch solvent valve to Rinse Well 2 Solvent Valve Position.

10 If Number of Rinse Stations = 2 and if Rinse Well 2 Solvent Valve Position = Rinse Well 1 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 2 Solvent Valve Position is not equal to the Rinse Well 1 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

11 Move to rinse station/well 3 in Outside Rinse Zone.

12 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

13 Switch solvent valve to Rinse Well 3 Solvent Valve Position.

14 If Rinse Well 3 Solvent Valve Position = Rinse Well 2 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 3 Solvent Valve Position is not equal to the Rinse Well 2 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

15 Move to rinse station/well 4 in Outside Rinse Zone.

16 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

17 Switch solvent valve to Rinse Well 4 Solvent Valve Position.

18 If Rinse Well 4 Solvent Valve Position = Rinse Well 3 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 4 Solvent Valve Position is not equal to the Rinse Well 3 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

19 Move to rinse station/well 5 in Outside Rinse Zone.

20 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

21 Switch solvent valve to Rinse Well 5 Solvent Valve Position.

22 If Rinse Well 5 Solvent Valve Position = Rinse Well 4 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 5 Solvent Valve Position is not equal to the Rinse Well 4 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

23 Switch Rinse Pump OFF.

24 Repeat Number of Wells to Mix.

GX Outside Rinse

This Task moves to the rinse station and then rinses the outside of the probe.

Properties

GX Outside Rinse Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the associated configuration, that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	
Purge Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2

GX Outside Rinse Task Properties Table *(Page 1 of 6)*

GX Outside Rinse Task Properties

Property Name	*Description*	*Default Value*
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse For information on rinse positions, see ***Appendix B, Rinse Locations***.
Number of Rinse Stations	Enter the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2

GX Outside Rinse Task Properties Table *(Page 2 of 6)*

GX Outside Rinse Task Properties

Property Name	*Description*	*Default Value*
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF

GX Outside Rinse Task Properties Table *(Page 3 of 6)*

GX Outside Rinse Task Properties

Property Name	*Description*	*Default Value*
Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Rinse Flow Rate	The speed at which the Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

GX Outside Rinse Task Properties Table *(Page 4 of 6)*

GX Outside Rinse Task Properties

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom

GX Outside Rinse Task Properties Table *(Page 5 of 6)*

GX Outside Rinse Task Properties

Property Name	*Description*	*Default Value*
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX Outside Rinse Task Properties Table *(Page 6 of 6)*

Sequence of Steps

1 Move Z to top.

2 Move to rinse station/well 1 in Outside Rinse Zone.

3 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

4 Switch valve to Purge Solvent Valve Position.

5 Dispense volume held by transfer tubing at 10 mL/min.

6 Switch Rinse Pump on at Rinse Pump Speed.

7 Switch solvent valve to Rinse Well 1 Solvent Valve Position.

8 If Rinse Well 1 Solvent Valve Position = Purge Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 1 Solvent Valve Position is not equal to the Purge Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

9 If Number of Rinse Stations = 2, perform steps 10–13 and step 26.

If Number of Rinse Stations = 3, perform steps 10–17 and step 26.

If Number of Rinse Stations = 4, perform steps 10–21 and step 26.

If Number of Rinse Stations = 5, perform all remaining steps.

10 Move to rinse station/well 2 in Outside Rinse Zone.

11 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

12 Switch solvent valve to Rinse Well 2 Solvent Valve Position.

13 If Rinse Well 2 Solvent Valve Position = Rinse Well 1 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 2 Solvent Valve Position is not equal to the Rinse Well 1 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

14 Move to rinse station/well 3 in Outside Rinse Zone.

15 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

16 Switch solvent valve to Rinse Well 3 Solvent Valve Position.

17 If Rinse Well 3 Solvent Valve Position = Rinse Well 2 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 3 Solvent Valve Position is not equal to the Rinse Well 2 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

18 Move to rinse station/well 4 in Outside Rinse Zone.

19 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

20 Switch solvent valve to Rinse Well 4 Solvent Valve Position.

21 If Rinse Well 4 Solvent Valve Position = Rinse Well 3 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 4 Solvent Valve Position is not equal to the Rinse Well 3 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

22 Move to rinse station/well 5 in Outside Rinse Zone.

23 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

24 Switch solvent valve to Rinse Well 5 Solvent Valve Position.

25 If Number of Rinse Stations = 5 and if Rinse Well 5 Solvent Valve Position = Rinse Well 4 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 5 Solvent Valve Position is not equal to the Rinse Well 4 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

26 Switch Rinse Pump OFF.

GX Prime

This Task moves to the rinse station and then primes the transfer tubing with reservoir solvent.

Properties

GX Prime Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the associated configuration, that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Number of Cycles	Enter the number of times to repeat dispensing.	3
Flow Rate	The speed at which the solvent moves into the syringe and then out of the probe.	10 mL/min
Zone	A grouping of wells, selected from a drop-down list of zones defined in the associated Bed Layout.	Inside Rinse
Well	Enter the well number in the Zone.	1

GX Prime Task Properties Table *(Page 1 of 2)*

GX Prime Task Properties (Continued)

Property Name	*Description*	*Default Value*
Z Option	One of five defined reference points, selected from a drop-down list, used when delivering liquid(s) to the rinse station: **Auto Calculate:** laces probe into well and at the liquid level in X,Y coordinate using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Z Offset.	Tube Top
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Z Option for delivering liquid(s) to the rinse station.	2 mm

GX Prime Task Properties Table *(Page 2 of 2)*

Sequence of Steps

1 Move Z to top.

2 Move to Well in Zone.

3 Lower probe to Z Option and Z Offset.

4 Home Pump.

5 Switch solvent valve to Solvent Valve Position.

6 Dispense transfer tubing capacity Number of Cycles.

7 Move Z to top.

GX Transfer

This Task aspirates the specified amount of sample volume from the wells of the source zone and then dispenses to the wells of the result zone.

If any extra volume of the source is aspirated, it is dispensed with the air gap in the drain. If no extra volume of solution is aspirated then the air gap is dispensed in the result.

The inside and outside of the probe is rinsed.

Properties

GX Transfer Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the associated configuration, that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

GX Transfer Task Properties Table *(Page 1 of 13)*

GX Transfer Task Properties (Continued)

Property Name	*Description*	*Default Value*
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Source Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Source Volume and Source Extra Volume are drawn.	
Source Well	Enter the well number in the Source Zone.	0
Result Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Source Volume is delivered.	
Result Well	Enter the well number in the Result Zone.	0
Number of Wells to Transfer	The number of Source Wells to transfer to Result Wells.	1
Air Gap Volume	The quantity of the air gap aspirated before the Source Volume.	50 µL
Source Volume	The quantity of sample	0

GX Transfer Task Properties Table *(Page 2 of 13)*

GX Transfer Task Properties (Continued)

Property Name	*Description*	*Default Value*
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0
Aspirate Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe.	1.5 mL/min
Dispense Flow Rate	The speed at which the Source Volume moves out of the probe.	3 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min

GX Transfer Task Properties Table *(Page 3 of 13)*

GX Transfer Task Properties (Continued)

Property Name	*Description*	*Default Value*
Aspirate Z Option	One of five defined reference points, selected from a drop-down list, used when drawing liquid(s) from the bed: **Auto Calculate:** Places probe into well and at the liquid level in X,Y coordinate using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Source Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Source Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Source Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Source Z Offset.	Bottom

GX Transfer Task Properties Table *(Page 4 of 13)*

GX Transfer Task Properties (Continued)

Property Name	*Description*	*Default Value*
Aspirate Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Source Z Option for drawing liquid(s) from the bed.	2 mm
Aspirate LLF	Select TRUE and the probe will follow the liquid down as it is aspirated from the Source Zone. The Aspirate Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Source Zone.	FALSE

GX Transfer Task Properties Table *(Page 5 of 13)*

GX Transfer Task Properties (Continued)

Property Name	*Description*	*Default Value*
Dispense Z Option	One of five defined reference points, selected from a drop-down list, used when delivering liquid(s) to the bed: **Auto Calculate:** Places probe into well and at the liquid level in X,Y coordinate using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Result Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Result Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Result Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Result Z Offset.	Bottom

GX Transfer Task Properties Table *(Page 6 of 13)*

GX Transfer Task Properties (Continued)

Property Name	*Description*	*Default Value*
Dispense Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Result Z Option for delivering liquid(s) to the bed.	2 mm
Dispense LLF	Select TRUE and the probe will follow the liquid up as it is delivered to the Result Zone. The Dispense Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid up as it is delivered to the Result Zone.	FALSE
Inside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1 For information on rinse positions, see ***Appendix B, Rinse Locations***.
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL

GX Transfer Task Properties Table *(Page 7 of 13)*

GX Transfer Task Properties (Continued)

Property Name	*Description*	*Default Value*
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min
Inside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the inside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset.	Tube Top

GX Transfer Task Properties Table *(Page 8 of 13)*

GX Transfer Task Properties (Continued)

Property Name	*Description*	*Default Value*
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	-7 mm
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse For information on rinse positions, see ***Appendix B, Rinse Locations***.
Number of Rinse Stations	Enter the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2

GX Transfer Task Properties Table *(Page 9 of 13)*

GX Transfer Task Properties (Continued)

Property Name	*Description*	*Default Value*
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2

GX Transfer Task Properties Table *(Page 10 of 13)*

GX Transfer Task Properties (Continued)

Property Name	*Description*	*Default Value*
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

GX Transfer Task Properties Table *(Page 11 of 13)*

GX Transfer Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom

GX Transfer Task Properties Table *(Page 12 of 13)*

GX Transfer Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX Transfer Task Properties Table *(Page 13 of 13)*

Sequence of Steps

ASPIRATE

1 Move Z to top.

2 Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.

3 Move to Source Well in Source Zone.

4 Lower probe to Aspirate Z Option and Aspirate Z Offset.

5 Aspirate Source Volume + Extra Volume at Aspirate Flow Rate.

6 Move Z to top.

DISPENSE

1 Move to Result Well in Result Zone.

2 Lower probe to Dispense Z Option and Dispense Z Offset.

3 Switch solvent valve to Solvent Valve Position.

4 Dispense Source Volume at Dispense Flow Rate.

5 Move Z to top.

INSIDE RINSE

1 Move to Inside Rinse Well in Inside Rinse Zone.

2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

3 Switch solvent valve to Solvent Valve Position.

4 Dispense volume held by transfer tubing at 10 mL/min.

5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate.

6 Move Z to top.

OUTSIDE RINSE

1 Move to rinse station/well 1 in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Switch Rinse Pump on at Rinse Pump Speed.

4 Switch solvent valve to Rinse Well 1 Solvent Valve Position.

5 If Rinse Well 1 Solvent Valve Position = Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 1 Solvent Valve Position is not equal to the Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

6 If Number of Rinse Stations = 2, perform steps 7–10 and step 23 and step 24.

If Number of Rinse Stations = 3, perform steps 7–14 and step 23 and step 24.

If Number of Rinse Stations = 4, perform steps 7–18 and step 23 and step 24.

If Number of Rinse Stations = 5, perform all remaining steps.

7 Move to rinse station/well 2 in Outside Rinse Zone.

8 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

9 Switch solvent valve to Rinse Well 2 Solvent Valve Position.

10 If Rinse Well 2 Solvent Valve Position = Rinse Well 1 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 2 Solvent Valve Position is not equal to the Rinse Well 1 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

11 Move to rinse station/well 3 in Outside Rinse Zone.

12 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

13 Switch solvent valve to Rinse Well 3 Solvent Valve Position.

14 If Number of Rinse Stations = 3 and if Rinse Well 3 Solvent Valve Position = Rinse Well 2 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 3 Solvent Valve Position is not equal to the Rinse Well 2 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

15 Move to rinse station/well 4 in Outside Rinse Zone.

16 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

17 Switch solvent valve to Rinse Well 4 Solvent Valve Position.

18 If Rinse Well 4 Solvent Valve Position = Rinse Well 3 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 4 Solvent Valve Position is not equal to the Rinse Well 3 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

19 Move to rinse station/well 5 in Outside Rinse Zone.

20 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

21 Switch solvent valve to Rinse Well 5 Solvent Valve Position.

22 If Rinse Well 5 Solvent Valve Position = Rinse Well 4 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 5 Solvent Valve Position is not equal to the Rinse Well 4 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

23 Switch Rinse Pump OFF.

24 Repeat Number of Wells to Transfer.

GX-281 Low Volume Partial Loop Injection

This Task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop.

Properties

GX-281 Low Volume Partial Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Injector	The injector or injection module, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Valve ID	Enter 2 for the Left GX Direct Injection Module. Enter 3 for the Right GX Direct Injection Module.	3

GX-281 Low Volume Partial Loop Injection Task Properties Table *(Page 1 of 10)*

GX-281 Low Volume Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	50 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	25 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	20 µL
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	5 mL/min

GX-281 Low Volume Partial Loop Injection Task Properties Table *(Page 2 of 10)*

GX-281 Low Volume Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	3 sec
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume and Extra Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom

GX-281 Low Volume Partial Loop Injection Task Properties Table *(Page 3 of 10)*

GX-281 Low Volume Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE

GX-281 Low Volume Partial Loop Injection Task Properties Table *(Page 4 of 10)*

GX-281 Low Volume Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Injection Z Option	One of five defined reference points, selected from a drop-down list, used when performing the injection: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Injection Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset.	Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

GX-281 Low Volume Partial Loop Injection Task Properties Table *(Page 5 of 10)*

GX-281 Low Volume Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Drain Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points, selected from a drop-down list, used when purging to the drain: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Drain Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Drain Z Offset.	Tube Top

GX-281 Low Volume Partial Loop Injection Task Properties Table *(Page 6 of 10)*

GX-281 Low Volume Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	1000 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	5 mL/min
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse For information on rinse positions, see ***Appendix B, Rinse Locations***.
Number of Rinse Stations	Enter the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2

GX-281 Low Volume Partial Loop Injection Task Properties Table *(Page 7 of 10)*

GX-281 Low Volume Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2

GX-281 Low Volume Partial Loop Injection Task Properties Table *(Page 8 of 10)*

GX-281 Low Volume Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

GX-281 Low Volume Partial Loop Injection Task Properties Table *(Page 9 of 10)*

GX-281 Low Volume Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX-281 Low Volume Partial Loop Injection Task Properties Table *(Page 10 of 10)*

Sequence of Steps

1 Move Z to top.
2 Set injection valve to INJECT.
3 Move to Drain Well in Drain Zone.
4 Lower probe into well to Drain Z Option and Drain Z Offset.
5 Switch solvent valve to Solvent Valve Position.
6 Dispense volume held by transfer tubing at 10 mL/min.
7 Move Z to top.

ASPIRATE

1 Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
2 Move to Sample Well in Sample Zone.
3 Lower probe into well to Sample Z Option and Sample Z Offset.
4 Aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.
5 Move Z to top.

INJECT

1 Move to Injection Well in Injection Zone.
2 Lower probe to Injection Z Option and Injection Z Offset.
3 Switch solvent valve to Solvent Valve Position.
4 Dispense Extra Volume at Dispense Flow Rate.
5 Switch injection valve to LOAD.
6 Wait 1.2 sec.

7 Dispense Injection Volume + Push Volume at Dispense Flow Rate.
8 Wait Injection Equilibration Time.
9 Synchronize.

INJECTION PORT RINSE

1 Switch injection valve to INJECT.
2 Switch solvent valve to Solvent Valve Position.
3 Dispense volume held by transfer tubing at 10 mL/min.
4 Dispense Injection Rinse Volume at Injection Rinse Flow Rate.
5 Move Z to top.

OUTSIDE RINSE

1 Move to rinse station/well 1 in Outside Rinse Zone.
2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3 Switch Rinse Pump on at Rinse Pump Speed.
4 Switch solvent valve to Rinse Well 1 Solvent Valve Position.
5 If Rinse Well 1 Solvent Valve Position = Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

   If Rinse Well 1 Solvent Valve Position is not equal to the Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

6 If Number of Rinse Stations = 2, perform steps 7–10 and step 23.

If Number of Rinse Stations = 3, perform steps 7–14 and step 23.

If Number of Rinse Stations = 4, perform steps 7–18 and step 23.

If Number of Rinse Stations = 5, perform all remaining steps.

7 Move to rinse station/well 2 in Outside Rinse Zone.

8 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

9 Switch solvent valve to Rinse Well 2 Solvent Valve Position.

10 If Rinse Well 2 Solvent Valve Position = Rinse Well 1 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 2 Solvent Valve Position is not equal to the Rinse Well 1 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

11 Move to rinse station/well 3 in Outside Rinse Zone.

12 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

13 Switch solvent valve to Rinse Well 3 Solvent Valve Position.

14 If Rinse Well 3 Solvent Valve Position = Rinse Well 2 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 3 Solvent Valve Position is not equal to the Rinse Well 2 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

15 Move to rinse station/well 4 in Outside Rinse Zone.

16 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

17 Switch solvent valve to Rinse Well 4 Solvent Valve Position.

18 If Rinse Well 4 Solvent Valve Position = Rinse Well 3 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 4 Solvent Valve Position is not equal to the Rinse Well 3 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

19 Move to rinse station/well 5 in Outside Rinse Zone.

20 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

21 Switch solvent valve to Rinse Well 5 Solvent Valve Position.

22 If Rinse Well 5 Solvent Valve Position = Rinse Well 4 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 5 Solvent Valve Position is not equal to the Rinse Well 4 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

23 Switch Rinse Pump OFF.

GX-281 Partial Loop Injection

This Task performs a partial loop injection.

Properties

GX-281 Partial Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Injector	The injector or injection module, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Valve ID	Enter 2 for the Left GX Direct Injection Module. Enter 3 for the Right GX Direct Injection Module.	3
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0

GX-281 Partial Loop Injection Task Properties Table *(Page 1 of 8)*

GX-281 Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Injection Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	50 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	20 µL
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	3 sec

GX-281 Partial Loop Injection Task Properties Table *(Page 2 of 8)*

GX-281 Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume and Extra Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm
Liquid Level Following	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE

GX-281 Partial Loop Injection Task Properties Table *(Page 3 of 8)*

GX-281 Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Injection Z Option	One of five defined reference points, selected from a drop-down list, used when performing the injection: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Injection Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset.	Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0
Drain Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1

GX-281 Partial Loop Injection Task Properties Table *(Page 4 of 8)*

GX-281 Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Drain Z Option	One of five defined reference points, selected from a drop-down list, used when purging to the drain: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Drain Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Drain Z Offset.	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	1000 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	5 mL/min

GX-281 Partial Loop Injection Task Properties Table *(Page 5 of 8)*

GX-281 Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse For information on rinse positions, see ***Appendix B, Rinse Locations***.
Number of Rinse Stations	Enter the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2

GX-281 Partial Loop Injection Task Properties Table *(Page 6 of 8)*

GX-281 Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

GX-281 Partial Loop Injection Task Properties Table *(Page 7 of 8)*

GX-281 Partial Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX-281 Partial Loop Injection Task Properties Table *(Page 8 of 8)*

Sequence of Steps

1 Move Z to top.
2 Set injection valve to INJECT.
3 Move to Drain Well in Drain Zone.
4 Lower probe into well to Drain Z Option and Drain Z Offset.
5 Switch solvent valve to Solvent Valve Position.
6 Dispense volume held by transfer tubing at 10 mL/min.
7 Move Z to top.

ASPIRATE

1 Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
2 Move to Sample Well in Sample Zone.
3 Lower probe into well to Sample Z Option and Sample Z Offset.
4 Aspirate Injection Volume + Extra Volume at Aspirate Flow Rate.
5 Move Z to top.

INJECT

1 Move to Injection Well in Injection Zone.
2 Lower probe to Injection Z Option and Injection Z Offset.
3 Switch solvent valve to Solvent Valve Position.
4 Dispense Extra Volume at Dispense Flow Rate.
5 Switch injection valve to LOAD.
6 Wait 1.2 sec.

7 Dispense Injection Volume at Dispense Flow Rate.
8 Wait Injection Equilibration Time.
9 Synchronize.

INJECTION PORT RINSE

1 Switch injection valve to INJECT.
2 Switch solvent valve to Solvent Valve Position.
3 Dispense volume held by transfer tubing at 10 mL/min.
4 Dispense Injection Rinse Volume at Injection Rinse Flow Rate.
5 Move Z to top.

OUTSIDE RINSE

1 Move to rinse station/well 1 in Outside Rinse Zone.
2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.
3 Switch Rinse Pump on at Rinse Pump Speed.
4 Switch solvent valve to Rinse Well 1 Solvent Valve Position.
5 If Rinse Well 1 Solvent Valve Position = Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

   If Rinse Well 1 Solvent Valve Position is not equal to the Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

6 If Number of Rinse Stations = 2, perform steps 7–10 and step 23.

If Number of Rinse Stations = 3, perform steps 7–14 and step 23.

If Number of Rinse Stations = 4, perform steps 7–18 and step 23.

If Number of Rinse Stations = 5, perform all remaining steps.

7 Move to rinse station/well 2 in Outside Rinse Zone.

8 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

9 Switch solvent valve to Rinse Well 2 Solvent Valve Position.

10 If Rinse Well 2 Solvent Valve Position = Rinse Well 1 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 2 Solvent Valve Position is not equal to the Rinse Well 1 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

11 Move to rinse station/well 3 in Outside Rinse Zone.

12 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

13 Switch solvent valve to Rinse Well 3 Solvent Valve Position.

14 If Rinse Well 3 Solvent Valve Position = Rinse Well 2 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 3 Solvent Valve Position is not equal to the Rinse Well 2 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

15 Move to rinse station/well 4 in Outside Rinse Zone.

16 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

17 Switch solvent valve to Rinse Well 4 Solvent Valve Position.

18 If Rinse Well 4 Solvent Valve Position = Rinse Well 3 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 4 Solvent Valve Position is not equal to the Rinse Well 3 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

19 Move to rinse station/well 5 in Outside Rinse Zone.

20 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

21 Switch solvent valve to Rinse Well 5 Solvent Valve Position.

22 If Rinse Well 5 Solvent Valve Position = Rinse Well 4 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 5 Solvent Valve Position is not equal to the Rinse Well 4 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

23 Switch Rinse Pump OFF.

GX-281 Prep Injection with Collection

This Task performs a partial loop injection using a push volume from the reservoir to push the injection volume into the sample loop and includes rinse of the low pressure fraction collection valve.

Properties

GX-281 Prep Injection with Collection Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Injector	The injector or injection module, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Valve ID	Enter 2 for the Left GX Direct Injection Module. Enter 3 for the Right GX Direct Injection Module.	3

GX-281 Prep Injection with Collection Task Properties Table *(Page 1 of 9)*

GX-281 Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	50 µL
Push Volume	A volume of reservoir solvent used to push the injection volume into the sample loop.	20 µL
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min

GX-281 Prep Injection with Collection Task Properties Table *(Page 2 of 9)*

GX-281 Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	3 sec
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume and Extra Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom

GX-281 Prep Injection with Collection Task Properties Table *(Page 3 of 9)*

GX-281 Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2
Liquid Level Following	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE

GX-281 Prep Injection with Collection Task Properties Table *(Page 4 of 9)*

GX-281 Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Injection Z Option	One of five defined reference points, selected from a drop-down list, used when performing the injection: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered , probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Injection Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset.	Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0
Drain Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the dilutor is homed.	Inside Rinse

GX-281 Prep Injection with Collection Task Properties Table *(Page 5 of 9)*

GX-281 Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points, selected from a drop-down list, used when purging to the drain: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Drain Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Drain Z Offset.	Tube Top
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7

GX-281 Prep Injection with Collection Task Properties Table *(Page 6 of 9)*

GX-281 Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	1000 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	5 mL/min
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse For information on rinse positions, see ***Appendix B, Rinse Locations***.
Number of Rinse Stations	Enter the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	2
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2

GX-281 Prep Injection with Collection Task Properties Table *(Page 7 of 9)*

GX-281 Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

GX-281 Prep Injection with Collection Task Properties Table *(Page 8 of 9)*

GX-281 Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX-281 Prep Injection with Collection Task Properties Table *(Page 9 of 9)*

Sequence of Steps

1 Move Z to top.
2 Set injection valve to INJECT.
3 Move to Drain Well in Drain Zone and lower probe into well.
4 Switch low pressure fraction collection valve to COLLECT for 2 seconds.
5 Lower probe into well to Drain Z Option and Drain Z Offset.
6 Switch solvent valve to Solvent Valve Position.
7 Dispense volume held by transfer tubing at 10 mL/min.
8 Move Z to top.

ASPIRATE

1 Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
2 Move to Sample Well in Sample Zone.
3 Lower probe into well to Sample Z Option and Sample Z Offset.
4 Aspirate Injection Volume at Aspirate Flow Rate.
5 Move Z to top.

INJECT

1 Move to Injection Well in Injection Zone.
2 Lower probe into well to Injection Z Option and Injection Z Offset.
3 Switch injection valve to LOAD.
4 Wait 1.2 sec.

5 Switch solvent valve to Solvent Valve Position.

6 Dispense Injection Volume + Push Volume at Dispense Flow Rate.

7 Wait Injection Equilibration Time.

8 Synchronize.

INJECTION PORT RINSE

1 Switch injection valve to INJECT.

2 Switch solvent valve to Solvent Valve Position.

3 Dispense volume held by transfer tubing at 10 mL/min.

4 Dispense Injection Rinse Volume at Injection Rinse Flow Rate.

5 Move Z to top.

OUTSIDE RINSE

1 Move to rinse station/well 1 in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Switch Rinse Pump on at Rinse Pump Speed.

4 Switch solvent valve to Rinse Well 1 Solvent Valve Position.

5 If Rinse Well 1 Solvent Valve Position = Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 1 Solvent Valve Position is not equal to the Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

6 If Number of Rinse Stations = 2, perform steps 7–10 and step 23.

If Number of Rinse Stations = 3, perform steps 7–14 and step 23.

If Number of Rinse Stations = 4, perform steps 7–18 and step 23.

If Number of Rinse Stations = 5, perform all remaining steps.

7 Move to rinse station/well 2 in Outside Rinse Zone.

8 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

9 Switch solvent valve to Rinse Well 2 Solvent Valve Position.

10 If Rinse Well 2 Solvent Valve Position = Rinse Well 1 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 2 Solvent Valve Position is not equal to the Rinse Well 1 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

11 Move to rinse station/well 3 in Outside Rinse Zone.

12 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

13 Switch solvent valve to Rinse Well 3 Solvent Valve Position.

14 If Rinse Well 3 Solvent Valve Position = Rinse Well 2 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 3 Solvent Valve Position is not equal to the Rinse Well 2 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

15 Move to rinse station/well 4 in Outside Rinse Zone.

16 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

17 Switch solvent valve to Rinse Well 4 Solvent Valve Position.

18 If Rinse Well 4 Solvent Valve Position = Rinse Well 3 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 4 Solvent Valve Position is not equal to the Rinse Well 3 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

19 Move to rinse station/well 5 in Outside Rinse Zone.

20 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

21 Switch solvent valve to Rinse Well 5 Solvent Valve Position.

22 If Rinse Well 5 Solvent Valve Position = Rinse Well 4 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 5 Solvent Valve Position is not equal to the Rinse Well 4 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

23 Switch Rinse Pump OFF.

GX-281 Rack Scan

This Task scans the racks on the locator plate of the Liquid Handler specified (currently only available for the GX-281 Liquid Handler) for the purpose of ensuring that the rack hardware setup matches the software rack (Bed Layout) setup.

Properties

GX-281 Rack Scan Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	

GX-281 Rack Scan Task Properties

GX-281 Total Loop Injection

This Task performs a total loop injection.

Properties

GX-281 Total Loop Injection Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Injector	The injector or injection module, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Valve ID	Enter 1 to for the GX Z Injection Module. Enter 2 for the Left GX Direct Injection Module. Enter 3 for the Right GX Direct Injection Module.	3
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	

GX-281 Total Loop Injection Task Properties Table *(Page 1 of 9)*

GX-281 Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Well	Enter the well number in the Sample Zone.	0
Injection Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Extra Volume, Injection Volume, and Push Volume are dispensed.	Injection Zone
Injection Well	Enter the well number in the Injection Zone.	1
Air Gap Volume	The quantity of an air gap.	50 µL
Extra Volume	An additional volume to the first volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Injection Volume.	1000 µL
Loop Volume	The capacity of the installed sample loop.	0 µL
Aspirate Flow Rate	The speed at which liquid volumes move into the probe.	5 mL/min
Dispense Flow Rate	The speed at which liquid volumes move out of the probe.	5 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min
Injection Equilibration Time	Time the program waits after loading the Extra Volume, Injection Volume, and Push Volume in the sample loop.	3 sec

GX-281 Total Loop Injection Task Properties Table *(Page 2 of 9)*

GX-281 Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume and Extra Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume and Extra Volume from the bed.	2 mm

GX-281 Total Loop Injection Task Properties Table *(Page 3 of 9)*

GX-281 Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Liquid Level Following	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE

GX-281 Total Loop Injection Task Properties Table *(Page 4 of 9)*

GX-281 Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Injection Z Option	One of five defined reference points, selected from a drop-down list, used when performing the injection: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Injection Z Offset, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Injection Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Injection Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Injection Z Offset.	Bottom
Injection Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Injection Z Option when performing the injection.	0

GX-281 Total Loop Injection Task Properties Table *(Page 5 of 9)*

GX-281 Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Drain Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, in which the dilutor is homed.	Inside Rinse
Drain Well	Enter the well number in the Drain Zone.	1
Drain Z Option	One of five defined reference points, selected from a drop-down list, used when purging to the drain: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Drain Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Drain Z Offset, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Drain Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Drain Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Drain Z Offset.	Tube Top

GX-281 Total Loop Injection Task Properties Table *(Page 6 of 9)*

GX-281 Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Drain Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Drain Z Option for purging to the drain.	-7
Injection Rinse Volume	The quantity of liquid used to rinse the injection port at Injection Well in Injection Zone.	1000 µL
Injection Rinse Flow Rate	The speed at which the Injection Rinse Volume moves out of the probe and into the injection port.	5 mL/min
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse For information on rinse positions, see ***Appendix B, Rinse Locations***.
Number of Rinse Stations	Enter the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2

GX-281 Total Loop Injection Task Properties Table *(Page 7 of 9)*

GX-281 Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. **Note:** The position designated for waste cannot be used for a solvent.	2
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

GX-281 Total Loop Injection Task Properties Table *(Page 8 of 9)*

GX-281 Total Loop Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX-281 Total Loop Injection Task Properties Table *(Page 9 of 9)*

Sequence of Steps

1 Move Z to top.
2 Set injection valve to INJECT.
3 Move to Drain Well in Drain Zone.
4 Lower probe into well to Drain Z Option and Drain Z Offset.
5 Switch solvent valve to Solvent Valve Position.
6 Dispense volume held by transfer tubing at 10 mL/min.
7 Move Z to top.

ASPIRATE

1 Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.
2 Move to Sample Well in Sample Zone.
3 Lower probe into well to Sample Z Option and Sample Z Offset.
4 Aspirate Loop Volume + Extra Volume at Aspirate Flow Rate.
5 Move Z to top.

INJECT

1 Move to Injection Well in Injection Zone.
2 Lower probe to Injection Z Option and Injection Z Offset.
3 Switch solvent valve to Solvent Valve Position.
4 Switch injection valve to LOAD.
5 Wait 1.2 sec.
6 Dispense Loop Volume + 1/2 Extra Volume at Dispense Flow Rate.

7 Wait Injection Equilibration Time.

8 Synchronize.

INJECTION PORT RINSE

1 Switch injection valve to INJECT.

2 Switch solvent valve to Solvent Valve Position.

3 Dispense volume held by transfer tubing at 10 mL/min.

4 Dispense Injection Rinse Volume at Injection Rinse Flow Rate.

5 Move Z to top.

OUTSIDE RINSE

1 Move to rinse station/well 1 in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Switch Rinse Pump on at Rinse Pump Speed.

4 Switch solvent valve to Rinse Well 1 Solvent Valve Position.

5 If Rinse Well 1 Solvent Valve Position = Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 1 Solvent Valve Position is not equal to the Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

6 If Number of Rinse Stations = 2, perform steps 7–10 and step 23.

If Number of Rinse Stations = 3, perform steps 7–14 and step 23.

If Number of Rinse Stations = 4, perform steps 7–18 and step 23.

If Number of Rinse Stations = 5, perform all remaining steps.

7 Move to rinse station/well 2 in Outside Rinse Zone.

8 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

9 Switch solvent valve to Rinse Well 2 Solvent Valve Position.

10 If Rinse Well 2 Solvent Valve Position = Rinse Well 1 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 2 Solvent Valve Position is not equal to the Rinse Well 1 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

11 Move to rinse station/well 3 in Outside Rinse Zone.

12 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

13 Switch solvent valve to Rinse Well 3 Solvent Valve Position.

14 If Rinse Well 3 Solvent Valve Position = Rinse Well 2 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 3 Solvent Valve Position is not equal to the Rinse Well 2 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

15 Move to rinse station/well 4 in Outside Rinse Zone.

16 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

17 Switch solvent valve to Rinse Well 4 Solvent Valve Position.

18 If Rinse Well 4 Solvent Valve Position = Rinse Well 3 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 4 Solvent Valve Position is not equal to the Rinse Well 3 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

19 Move to rinse station/well 5 in Outside Rinse Zone.

20 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

21 Switch solvent valve to Rinse Well 5 Solvent Valve Position.

22 If Rinse Well 5 Solvent Valve Position = Rinse Well 4 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 5 Solvent Valve Position is not equal to the Rinse Well 4 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

23 Switch Rinse Pump OFF.

GX-281 Z Inject Prep Injection

This Task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop.

Properties

GX-281 Z Inject Prep Injection Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Injector	The injector or injection module, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Air Gap Volume	The quantity of an air gap.	10 µL

GX-281 Z Inject Prep Injection Task Properties Table *(Page 1 of 8)*

GX-281 Z Inject Prep Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Pull Volume	A volume of air used to pull the injection volume into the sample loop.	400 µL **Note:** This default was determined using a 125 mm Z travel height, a 0.8 mm ID probe, and 35.6 cm (14 in.) of 0.8 mm ID tubing between the probe and the injection valve.
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which the Injection Volume and the Pull Volume moves into the probe.	2 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min

GX-281 Z Inject Prep Injection Task Properties Table *(Page 2 of 8)*

GX-281 Z Inject Prep Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume from the bed.	2 mm

GX-281 Z Inject Prep Injection Task Properties Table *(Page 3 of 8)*

GX-281 Z Inject Prep Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Liquid Level Following	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE
Inside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1 For information on rinse positions, see ***Appendix B, Rinse Locations***.
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

GX-281 Z Inject Prep Injection Task Properties Table *(Page 4 of 8)*

GX-281 Z Inject Prep Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Inside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the inside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Inside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset.	Tube Top
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	-7 mm

GX-281 Z Inject Prep Injection Task Properties Table *(Page 5 of 8)*

GX-281 Z Inject Prep Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse For information on rinse positions, see ***Appendix B, Rinse Locations***.
Number of Rinse Stations	Enter the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2

GX-281 Z Inject Prep Injection Task Properties Table *(Page 6 of 8)*

GX-281 Z Inject Prep Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	OFF
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

GX-281 Z Inject Prep Injection Task Properties Table *(Page 7 of 8)*

GX-281 Z Inject Prep Injection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX-281 Z Inject Prep Injection Task Properties Table *(Page 8 of 8)*

Sequence of Steps

1 Move Z to top.

2 Move to Inside Rinse Well in Inside Rinse Zone.

3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

4 Switch solvent valve to Solvent Valve Position.

5 Dispense volume held by transfer tubing at 10 mL/min.

6 Move Z to top.

ASPIRATE

1 Switch injection valve to LOAD.

2 Wait 0.2 min.

3 Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.

4 Move to Sample Well in Sample Zone.

5 Lower probe into well to Sample Z Option and Sample Z Offset.

6 Aspirate Injection Volume at Aspirate Flow Rate.

7 Move Z to top.

8 Aspirate Pull Volume at Aspirate Flow Rate.

9 Wait injection equilibration time.

10 Synchronize.

INJECT

1 Switch injection valve to INJECT.

2 Move Z to top.

INSIDE RINSE

1 Move to Inside Rinse Well in Inside Rinse Zone.

2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

3 Switch solvent valve to Solvent Valve Position.

4 Dispense volume held by transfer tubing at 10 mL/min.

5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate.

6 Move Z to top.

OUTSIDE RINSE

1 Move to rinse station/well 1 in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Switch Rinse Pump on at Rinse Pump Speed.

4 Switch solvent valve to Rinse Well 1 Solvent Valve Position.

5 If Rinse Well 1 Solvent Valve Position = Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 1 Solvent Valve Position is not equal to the Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

6 If Number of Rinse Stations = 2, perform steps 7–10 and step 23.

If Number of Rinse Stations = 3, perform steps 7–14 and step 23.

If Number of Rinse Stations = 4, perform steps 7–18 and step 23.

If Number of Rinse Stations = 5, perform all remaining steps.

7 Move to rinse station/well 2 in Outside Rinse Zone.

8 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

9 Switch solvent valve to Rinse Well 2 Solvent Valve Position.

10 If Rinse Well 2 Solvent Valve Position = Rinse Well 1 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 2 Solvent Valve Position is not equal to the Rinse Well 1 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

11 Move to rinse station/well 3 in Outside Rinse Zone.

12 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

13 Switch solvent valve to Rinse Well 3 Solvent Valve Position.

14 If Rinse Well 3 Solvent Valve Position = Rinse Well 2 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 3 Solvent Valve Position is not equal to the Rinse Well 2 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

15 Move to rinse station/well 4 in Outside Rinse Zone.

16 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

17 Switch solvent valve to Rinse Well 4 Solvent Valve Position.

18 If Rinse Well 4 Solvent Valve Position = Rinse Well 3 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 4 Solvent Valve Position is not equal to the Rinse Well 3 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

19 Move to rinse station/well 5 in Outside Rinse Zone.

20 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

21 Switch solvent valve to Rinse Well 5 Solvent Valve Position.

22 If Rinse Well 5 Solvent Valve Position = Rinse Well 4 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 5 Solvent Valve Position is not equal to the Rinse Well 4 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

23 Switch Rinse Pump OFF.

GX-281 Z Inject Prep Injection with Collection

This Task performs a partial loop injection using a pull volume of air to pull the injection volume into the sample loop and also rinses the low pressure fraction collection valve.

Properties

GX-281 Z Inject Prep Injection with Collection Task Properties

Property Name	*Description*	*Default Value*
Liquid Handler	The liquid handler, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Injector	The injector or injection module, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Sample Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, from which the Injection Volume and Extra Volume is aspirated.	
Sample Well	Enter the well number in the Sample Zone.	0
Air Gap Volume	The quantity of an air gap.	20 µL

GX-281 Prep Injection with Collection Task Properties Table *(Page 1 of 8)*

GX-281 Z Inject Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Pull Volume	A volume of air used to pull the injection volume into the sample loop.	200 µL **Note:** This default was determined using a 125 mm Z travel height, a 0.8 mm ID probe, and 35.6 cm (14 in.) of 0.8 mm ID tubing between the probe and the injection valve.
Injection Volume	The volume of sample to be injected.	0 µL
Aspirate Flow Rate	The speed at which the Injection Volume and the Pull Volume moves into the probe.	4 mL/min
Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe.	1 mL/min

GX-281 Prep Injection with Collection Task Properties Table *(Page 2 of 8)*

GX-281 Z Inject Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Sample Z Option	One of five defined reference points, selected from a drop-down list, used when aspirating the Injection Volume from the bed: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Sample Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Sample Z Offset value to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Sample Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Sample Z Offset.	Bottom
Sample Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Sample Z Option used when aspirating the Injection Volume from the bed.	2 mm

GX-281 Prep Injection with Collection Task Properties Table *(Page 3 of 8)*

GX-281 Z Inject Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Liquid Level Following	Select TRUE and the probe will follow the liquid down as it is aspirated from the Sample Zone. The Sample Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated from the Sample Zone.	FALSE
Inside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	Enter the well number in the Inside Rinse Zone.	1 For information on rinse positions, see ***Appendix B, Rinse Locations***.
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	250 µL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

GX-281 Prep Injection with Collection Task Properties Table *(Page 4 of 8)*

GX-281 Z Inject Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Inside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the inside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Inside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset.	Tube Top
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	-7 mm

GX-281 Prep Injection with Collection Task Properties Table *(Page 5 of 8)*

GX-281 Z Inject Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Zone	The zone, selected from a drop-down list of zones defined in the associated Bed Layout, to which the Outside Rinse Volume is delivered.	Outside Rinse For information on rinse positions, see ***Appendix B, Rinse Locations***.
Number of Rinse Stations	Enter the number of rinse stations to be used when performing the outside rinse. Valid range is 1–5.	2
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 1. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 2. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 3. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 4. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2

GX-281 Prep Injection with Collection Task Properties Table *(Page 6 of 8)*

GX-281 Z Inject Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System during the outside rinse at rinse station 5. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	2
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select HIGH, LOW, or OFF.	HIGH
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	500 µL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

GX-281 Prep Injection with Collection Task Properties Table *(Page 7 of 8)*

GX-281 Z Inject Prep Injection with Collection Task Properties (Continued)

Property Name	*Description*	*Default Value*
Outside Rinse Z Option	One of five defined reference points, selected from a drop-down list, used when performing the outside rinse: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset.	Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option for rinsing the probe at the outside rinse position in the rinse station.	2 mm

GX-281 Prep Injection with Collection Task Properties Table *(Page 8 of 8)*

Sequence of Steps

1 Move Z to top.

2 Move to Inside Rinse Well in Inside Rinse Zone.

3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

4 Switch solvent valve to Solvent Valve Position.

5 Dispense volume held by transfer tubing at 10 mL/min.

6 Move Z to top.

7 Switch low pressure fraction collection valve to COLLECT for 2 seconds.

ASPIRATE

1 Switch injection valve to LOAD.

2 Wait 0.2 min.

3 Switch solvent valve to waste and aspirate Air Gap Volume at Air Gap Flow Rate.

4 Move to Sample Well in Sample Zone.

5 Lower probe into well to Sample Z Option and Sample Z Offset.

6 Aspirate Injection Volume at Aspirate Flow Rate.

7 Move Z to top.

8 Aspirate Pull Volume at Aspirate Flow Rate.

9 Wait injection equilibration time.

10 Synchronize.

INJECT

1 Switch injection valve to INJECT.

2 Move Z to top.

INSIDE RINSE

1 Move to Inside Rinse Well in Inside Rinse Zone.

2 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset.

3 Switch solvent valve to Solvent Valve Position.

4 Dispense volume held by transfer tubing at 10 mL/min.

5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate.

6 Move Z to top.

OUTSIDE RINSE VOLUME

1 Move to rinse station/well 1 in Outside Rinse Zone.

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

3 Switch Rinse Pump on at Rinse Pump Speed.

4 Switch solvent valve to Rinse Well 1 Solvent Valve Position.

5 If Rinse Well 1 Solvent Valve Position = Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 1 Solvent Valve Position is not equal to the Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

6 If Number of Rinse Stations = 2, perform steps 7–10 and step 23.

If Number of Rinse Stations = 3, perform steps 7–14 and step 23.

If Number of Rinse Stations = 4, perform steps 7–18 and step 23.

If Number of Rinse Stations = 5, perform all remaining steps.

7 Move to rinse station/well 2 in Outside Rinse Zone.

8 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

9 Switch solvent valve to Rinse Well 2 Solvent Valve Position.

10 If Rinse Well 2 Solvent Valve Position = Rinse Well 1 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 2 Solvent Valve Position is not equal to the Rinse Well 1 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

11 Move to rinse station/well 3 in Outside Rinse Zone.

12 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

13 Switch solvent valve to Rinse Well 3 Solvent Valve Position.

14 If Rinse Well 3 Solvent Valve Position = Rinse Well 2 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 3 Solvent Valve Position is not equal to the Rinse Well 2 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

15 Move to rinse station/well 4 in Outside Rinse Zone.

16 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

17 Switch solvent valve to Rinse Well 4 Solvent Valve Position.

18 If Rinse Well 4 Solvent Valve Position = Rinse Well 3 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 4 Solvent Valve Position is not equal to the Rinse Well 3 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

19 Move to rinse station/well 5 in Outside Rinse Zone.

20 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset.

21 Switch solvent valve to Rinse Well 5 Solvent Valve Position.

22 If Rinse Well 5 Solvent Valve Position = Rinse Well 4 Solvent Valve Position, dispense Outside Rinse Volume at Outside Rinse Flow Rate.

If Rinse Well 5 Solvent Valve Position is not equal to the Rinse Well 4 Solvent Valve Position, dispense transfer tubing capacity and Outside Rinse Volume at Outside Rinse Flow Rate.

23 Switch Rinse Pump OFF.

305 and 307 Pump Tasks

The table below lists the tasks for the 305 and 307 Pumps.

305 and 307 Pump Tasks

Gilson Task Name	*For detailed information:*
Contact Open-Close This Task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.	See page A-467.
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Wait for Contact This Task initiates a wait in the Method until a contact state change is detected of the specified input contact on the specified Instrument.	See page A-45.
305 and 307 Pump Tasks	

306 Pump Tasks

The table below lists the task for the 306 Pump.

306 Pump Tasks

Gilson Task Name	*For detailed information:*
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
306 Pump Tasks	

321 HPLC Pump Tasks

The table below lists the tasks for the 321 HPLC Pump.

321 HPLC Pump Tasks

Gilson Task Name	*For detailed information:*
Contact Open-Close This Task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.	See page A-467.
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Solvent Valve Position This Task switches the solvent valve position on the specified pump.	See page A-458.
Wait for Contact This Task initiates a wait in the Method until a contact state change is detected of the specified input contact on the specified Instrument.	See page A-45.
321 HPLC Pump Tasks	

Solvent Valve Position

This Task switches the solvent valve position on the specified pump.

Properties

Solvent Valve Position Task Properties

Property Name	*Description*	*Default Value*
Pump	The pump, selected from a drop-down list of instruments in the Configuration, that the Task will affect.	
Solvent Valve	Desired position of the solvent valve on the Pump. Valid range is 1–6.	1
Solvent Valve Position		

322 HPLC Pump Tasks

The table below lists the tasks for the 322 HPLC Pump.

322 HPLC Pump Tasks

Gilson Task Name	*For detailed information:*
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Solvent Valve Position This Task switches the solvent valve position on the specified pump.	See page A-458.
322 HPLC Pump Tasks	

331/333 Prep-Scale HPLC Pump Tasks

The table below lists the tasks for the 331 and 333 Prep-Scale HPLC Pumps.

331/333 Prep-Scale HPLC Pump Tasks

Gilson Task Name	*For detailed information:*
Contact Open-Close This Task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.	See page A-467.
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Solvent Valve Position This Task switches the solvent valve position on the specified pump.	See page A-458.
Wait for Contact This Task initiates a wait in the Method until a contact state change is detected of the specified input contact on the specified Instrument.	See page A-45.
331/333 Prep-Scale HPLC Pump Tasks	

332/334 Prep-Scale HPLC Pump Tasks

The table below lists the tasks for the 332/334 Prep-Scale HPLC Pumps.

332/334 Prep-Scale HPLC Pump Tasks

Gilson Task Name	*For detailed information:*
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Solvent Valve Position This Task switches the solvent valve position on the specified pump.	See page A-458.
332/334 Prep-Scale HPLC Pump Tasks	

VALVEMATE™ Tasks

The table below lists the tasks for the VALVEMATE.

VALVEMATE™ Tasks

Gilson Task Name	*For detailed information:*
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Switch VALVEMATE This Task changes the valve position on a VALVEMATE Valve Actuator.	See page A-463.
VALVEMATE™ Tasks Table	

Switch VALVEMATE

This Task changes the valve position on a VALVEMATE Valve Actuator.

Properties

Switch VALVEMATE Task Properties

Property Name	*Description*	*Default Value*
VALVEMATE	The VALVEMATE, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Position	Desired position of the valve on the VALVEMATE. **Note:** When using a 2-position valve, choose 0 for position 1 or 1 for position 2.	1

Switch VALVEMATE Task Properties

402 Pump Single and 402 Pump Dual Tasks

The table below lists the tasks for the 402 Pump Single and 402 Pump Dual.

402 Pump Single and 402 Pump Dual Tasks

Gilson Task Name and Description	*For detailed information:*
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Prime Dilutor This Task primes the dilutor in the specified zone. It aspirates the specified amount of volume from the reservoir (or the syringe capacity) and then dispenses to the specified wells. If the volume specified exceeds the syringe capacity, then multiple aspirates and dispenses will be performed to deliver the requested volume.	See page A-172.
402 Pump Single and 402 Pump Dual Tasks	

506C System Interface Tasks

The table below lists the tasks for the 506C System Interface.

506C System Interface Tasks

Gilson Task Name	*For detailed information:*
506C Autozero Channel This Task sets the output trace of the specified channel(s) on the System Interface to zero.	See page A-466.
Contact Open-Close This Task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.	See page A-467.
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Wait for Contact This Task initiates a wait in the Method until a contact state change is detected of the specified input contact on the specified Instrument.	See page A-45.
506C System Interface Tasks	

506C Autozero Channel

This Task sets the output trace of the specified channel(s) on the System Interface to zero.

Properties

506C Autozero Channel Task Properties

Property Name	*Description*	*Default Value*
System Interface	The System Interface, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Channel	Enter the letter or letters that correspond to the output channel to act on for the system interface selected.	ABCD
506C Autozero Channel		

Contact Open-Close

This Task opens and powers off, closes and powers on, or pulses the specified output contact on a specified instrument.

Properties

Contact Open-Close Task Properties

Property Name	*Description*	*Default Value*
Instrument	The instrument, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
Contact ID	Enter the number that corresponds to the output contact to act on for the instrument selected.	1
Contact OPEN/CLOSE	The action to occur: open and power off (OPEN) or close and power on (CLOSE) the Contact ID.	CLOSE
Contact PULSE	Toggles the output state.	FALSE
Pulse Duration	The time the program will wait between output state toggle.	1 second

Contact Open-Close Task Properties

Auxiliary Tasks

The table below lists the Gilson auxiliary Tasks.

Gilson Auxiliary Tasks

Gilson Task Name	*For detailed information:*
Execute This Task invokes and external application.	See page A-469.
GSIOC This Task sends a GSIOC command to the specified instrument.	See page A-470.
Prompt This Task displays a prompt dialog with the selected message.	See page A-471.
Start Data Collection This Task tells TRILUTION LC to begin collecting data. This Task has no properties to set. It is identified by the following image when added to the Control in the Method ( ).	See page A-12.
Stop Data Collection This Task tells TRILUTION LC to stop collecting data. This Task has no properties to set. It is identified by the following image when added to the Control in the Method ( ).	See page A-13.
Wait Time This Task waits a specified length of time and displays an optional message.	See page A-472.
Gilson Auxiliary Tasks	

Execute

This Task invokes an external application.

Properties

Execute Task Properties

Property Name	*Description*	*Default Value*
Path and Name	File path to which the Command Line Parameters are sent. Click ... to browse for the executable program.	
Command Line Parameters	The information sent to the program located at the Path and Name.	

Execute Task Properties

GSIOC

This Task sends a GSIOC command to the specified instrument.

Properties

GSIOC Task Properties

Property Name	*Description*	*Default Value*
Instrument	The instrument, selected from a drop-down list of instruments in the associated configuration, that the Task will affect.	
GSIOC Command	The string that sends an instruction to the Instrument.	
Type	The command type: BUFFERED or IMMEDIATE.	BUFFERED

GSIOC Task Properties

Sequence of Steps

1 Send GSIOC Command of Type to Instrument.

Prompt

This Task displays a prompt dialog with the selected message.

Properties

Prompt Task Properties

Property Name	*Description*	*Default Value*
Message	Enter the text to display in the message box.	Message

Prompt Task Properties

Wait Time

This Task waits a specified length of time and displays an optional message.

Properties

Wait Time Task Properties

Property Name	*Brief Description*	*Default Value*
Message	Enter the text to display in the message box during the wait time.	
Wait Time (sec)	Time the program waits before starting the next Task.	0

Wait Time Task Properties

Sequence of Steps

1 Wait for Wait Time to elapse while displaying the optional Message.

Rinse Locations

B

Rinse locations are assigned to zones in the Bed Layout Builder. Inside and outside rinse zones are then chosen in the Task. This appendix describes the recommended rinse positions for the:

- **215 Liquid Handler** on page B-2
- **GX-281 Liquid Handler** on page B-4

215 Liquid Handler

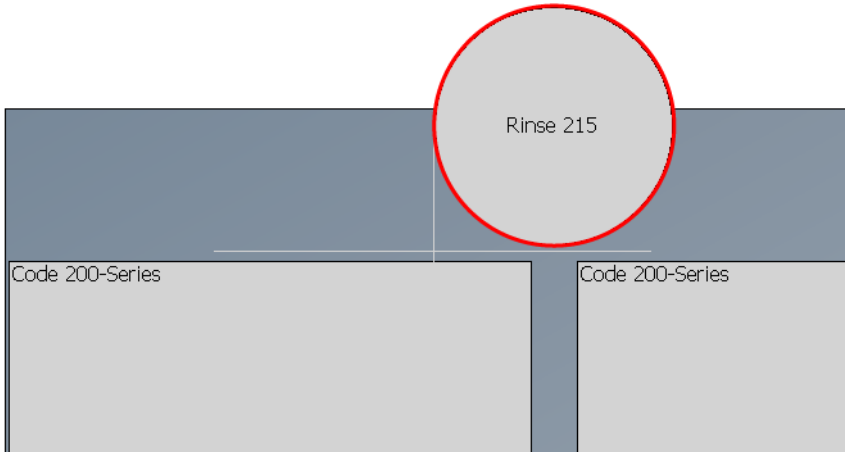
Bed Layout Trays (Templates)

215 for Code 517 Rack

215 for Five Code 200-Series Racks

215 for Seven XL Racks

Rinse 215 (Footprint)



Rinse 215

Drain 215 Body

Rinse 215 Insert

Rinse 215 Deep Short Insert

Rinse 215 Deep Tall Insert

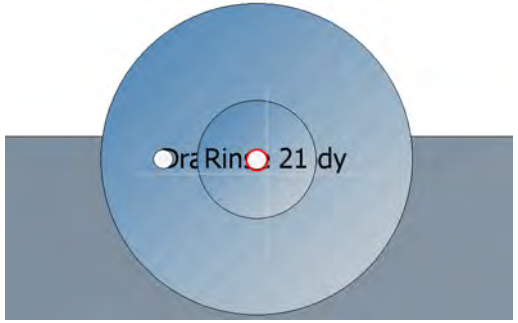
Rinse 215 Flow-Through Short Insert

Rinse 215 Flow-Through Tall Insert

Rinse 215 Shallow Short Insert

Rinse 215 Shallow Tall Insert

Inside Rinse Location (Left Well)



Outside or Flow-Through Rinse Location (Center Well)

GX-281 Liquid Handler

Bed Layout Tray (Template)

GX-281

GX-281 Rinse Stations (Footprints)

GX-281 Rinse Stations

Drain/Rinse Station for Inside Rinse of Probe

Drain/Rinse Station GX-281 Extra Tall (Rack)

Use	Z Clamp Height (mm)	Rinse Station part number
Inside Rinse	210	26034556

Drain/Rinse Station GX-281 Tall (Rack)

Use	Z Clamp Height (mm)	Rinse Station part number
Inside Rinse	175	26034555

Drain/Rinse Station GX-281 Short (Rack)

Use	Z Clamp Height (mm)	Rinse Station part number
Inside Rinse	125	26034554

Rinse Station for Outside Rinse of Probe (Static)

Rinse Station for Outside Rinse of Probe (Flowing)

Rinse Station GX-281 Extra Tall (Rack)

Use	Z Clamp Height (mm)	Rinse Station part number
Outside Rinse (static or flowing)	210	26034553

Rinse Station GX-281 Tall (Rack)

Use	Z Clamp Height (mm)	Rinse Station part number
Outside Rinse (static or flowing)	175	26034551

Rinse Station GX-281 Short (Rack)

Use	Z Clamp Height (mm)	Rinse Station part number
Outside Rinse (static or flowing)	125	26034552

List of Commands

C

The Commands palette lists the pre-defined Commands with properties. These Commands are read-only. Few properties are common to all the Commands.

Instrument Type	*For List of Commands:*
Data Channel Commands	See page C-2.
Detector Commands	See page C-5.
Fraction Collector Commands	See page C-30.
Injector Commands	See page C-57.
Liquid Handling Commands	See page C-60.
Mobile Phase Commands	See page C-88.
Switching Valve Commands	See page C-93.
System Commands	See page C-96.
System Interface Commands	See page C-106.

Data Channel Commands

The table below lists the commands for data channels.

Data Channel Commands

Command Name and Description	*For detailed information:*
Start Data Collection This command tells TRILUTION LC to begin collecting data. This command has no properties to set.	See page C-3.
Stop Data Collection This command tells TRILUTION LC to stop collecting data. This command has no properties to set.	See page C-4.
Data Channel Commands	

Start Data Collection

This command tells TRILUTION LC to begin collecting data. This command has no properties to set.

Stop Data Collection

This command tells TRILUTION LC to stop collecting data. This command has no properties to set.

Detector Commands

The table below lists the commands for detectors.

Detector Commands

Command Name and Description	*For detailed information:*
Autozero Channel This command zeros the output channels of the detector. All buffered values also become zero.	See page C-9.
Lock Front Panel Inhibits use of instrument's front panel during a run.	See page C-10.
Read Display This command reads the message on the front panel display of the selected instrument and then records it in the log file.	See page C-17.
Record Display This command reads the message on the front panel display of the selected instrument and then records it in the Analysis Report.	See page C-18.
Record Setting This command queries the value of the selected setting. Should be used in an expression with a variable of Command Return type.	See page C-19.
Detector Commands Table *(Page 1 of 4)*	

Detector Commands (Continued)

Set Dual Ratio Multiplier This command sets the ratio output display on channel 3.	See page C-20.
Set Dual Ratio Threshold This command sets the ratio threshold. This command is used to prevent the detector from interpreting a noisy baseline as a series of peaks by setting a threshold higher than the highest baseline noise level.	See page C-21.
Set Mode This command sets the mode to Single, Dual, or Scan modes.	See page C-11.
Set Peak Width This command sets the Peak Width and Mode on the selected Detector.	See page C-12.
Set Scan Output Time This command sets the Time it takes chart recorder to trace a wavelength scan on strip chart paper.	See page C-22.
Set Sensitivity Sets the sensitivities for monitoring a sample on a separate output channels on the selected Detector.	See page C-13.
Set Wavelength Sets the wavelengths to be monitored based on the Mode selected for the selected Detector.	See page C-14.
Detector Commands Table *(Page 2 of 4)*	

Detector Commands (Continued)

Start File This command runs a file that was created in the detector's software.	See page C-23.
Start Scan This command initiates the scan between Wavelength 1 and Wavelength 2.	See page C-24.
Turn Lamp Off This command turns off power to the lamps while maintaining power to the Detector.	See page C-15.
Turn Lamp On Turns the UV and visible lamps on for the specified Detector.	See page C-16.
Turn Lamp Saver Off This command toggles the lamp saver option off.	See page C-25.
Turn Lamp Saver On This command toggles the lamp saver option on. When the lamp saver option is on, the detector automatically turns off a lamp if it is not being used by the detector.	See page C-26.
Unlock Front Panel Enables use of instrument's front panel during a run.	See page C-27.
Detector Commands Table *(Page 3 of 4)*	

Detector Commands (Continued)

Wait for Display For synchronization between injector program and TRILUTION. During the run, TRILUTION enters a wait state until the indicated message appears. When the message appears, TRILUTION continues the run.	See page C-28.
Write to Display This command displays a message in the front panel display of the selected instrument. **Note:** Write to Display is only available for the 151 and 155 Detector as the 152 and 156 Detectors do not have a front panel display	See page C-29.
Detector Commands Table *(Page 4 of 4)*	

Autozero Channel

This command zeros the output channels of the detector. All buffered values also become zero.

Properties

Autozero Channel Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector that the command will affect.	Detector

Autozero Channel Properties

Lock Front Panel

Inhibits use of instrument's front panel during a run.

Properties

Lock Front Panel Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector that the command will affect.	Detector

Lock Front Panel Command Properties

Set Mode

This command sets the mode to Single, Dual, or Scan modes.

Properties

Set Mode Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector that the command will affect.	Detector
Mode	Select from DUAL, SCAN, or SINGLE.	SINGLE

Set Mode Properties

Set Peak Width

This command sets the Peak Width and Mode on the selected Detector.

Properties

Set Peak Width Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector that the command will affect.	Detector
Mode	Select from DUAL, SCAN, or SINGLE.	SINGLE
Peak Width	The detector must know the width of the narrowest peak in your run. The detector uses this information to optimize the presentation of peaks and to minimize baseline noise. To set the peak width accurately, run a chromatogram using the minimum peak width setting. Measure the width at half height of the narrowest peak. Valid range is 0 and 4–99 seconds for SINGLE or SCAN mode or 4–99 for DUAL mode.	0

Set Peak Width Command Properties

Set Sensitivity

Sets the sensitivities for monitoring a sample on a separate output channels on the selected Detector.

Properties

Set Sensitivity Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector, selected from a drop-down list of instruments in the associated Configuration, that the command will affect.	Detector
Mode	Select from DUAL, SCAN, or SINGLE.	SINGLE
Sensitivity 1	One of two sensitivities for monitoring a sample on a separate output channels. Valid range is 0.001 to 2.0 AUFS.	0
Sensitivity 2	One of two sensitivities for monitoring a sample on a separate output channels. Valid range is 0.001 to 2.0 AUFS.	0
Sensitivity 3	Only used when SCAN mode is selected; the sensitivity for monitoring output channel 3. Valid range is 0.001–2.000 AUFS	0

Set Sensitivity Command Properties

Set Wavelength

Sets the wavelengths to be monitored based on the Mode selected for the selected Detector.

Properties

Set Wavelength Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector that the command will affect.	Detector
Mode	Select from DUAL, SCAN, or SINGLE.	SINGLE
Wavelength 1 (nm)	The monitor wavelength when DUAL or SINGLE mode is selected. Valid range is 190–700 nm.	0
Wavelength 2 (nm)	The monitor wavelength for output channel 2 when DUAL mode is selected. Valid range is 190–700 nm.	0
Wavelength 3 (nm)	Only used when SCAN mode is selected; the sensitivity for monitoring output channel 3. Valid range is 0.001–2.000 AUFS	0

Set Wavelength Command Properties

Turn Lamp Off

This command turns off power to the lamps while maintaining power to the Detector.

Properties

Turn Lamp Off Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector that the command will affect.	Detector

Turn Lamp Off Command Properties

Turn Lamp On

Turns the UV and visible lamps on for the specified Detector.

Properties

Turn Lamp On Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector that the command will affect.	Detector

Turn Lamp On Command Properties

Read Display

This command reads the message on the front panel display of the selected instrument and then records it in the log file.

Properties

Read Display Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector that the command will affect.	Detector
Line	For two-line displays, indicate the line for which to read and record the message.	1

Read Display Command Properties

Record Display

This command reads the message on the front panel display of the selected instrument and then records it in the Analysis Report.

Properties

Record Display Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector that the command will affect.	Detector
Line	For two-line displays, indicate the line for which to read and record the message.	1

Record Display Command Properties

Record Setting

This command queries the value of the selected setting. Should be used in an expression with a variable of Command Return type.

Properties

Record Setting Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector that the command will affect.	Detector
Setting	The options for settings which will be queried for a value are: Single WL, Single Sens. 1, Single Sens. 2, Single Peak Width, Dual WL 1, Dual WL 2, Dual Sens. 1, Dual Sens. 2, Dual Peak Width, Dual Ratio Multi., Dual Ratio Thres., Scan WL, Scan WL 1, Scan WL 2, Scan Sens. 1, Scan Sens. 2, Scan Sens. 3, ScanPeakWidth, ScanOut Time, Conc.Factor, Event Channel(s), AutoRange Channel(s), AutoRange Mult., GSIOC UnitID, Operation Mode, Lamp Saver, UV Lamp Alarm, Visible Lamp Alarm, Channel 1 Scale, Channel 1 OffSet, Channel 2 Scale, Channel 2 OffSet, Channel 3 Scale, and Channel 3 OffSet.	Single WL

Record Setting Command Properties

Set Dual Ratio Multiplier

This command sets the ratio output display on channel 3.

Properties

Set Dual Ratio Multiplier Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector that the command will affect.	Detector
Ratio	Use this parameter to enhance the ratio output display on channel 3. (The ratio output is automatically displayed at 50% full scale. This allows both positive and negative ratios within a trace to be presented.) Valid range is 0.01–99.99	0

Set Dual Ratio Multiplier Command Properties

Set Dual Ratio Threshold

This command sets the ratio threshold. This command is used to prevent the detector from interpreting a noisy baseline as a series of peaks by setting a threshold higher than the highest baseline noise level.

Properties

Set Dual Ratio Threshold Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector that the command will affect.	Detector
Ratio	In dual wavelength mode, output channel 3 shows a ratio of the absorbance at wavelength 1 to the absorbance at wavelength 2. The ratio can help you determine peak purity. The absorbance ratio is displayed only when the absorbance at both wavelengths exceeds a specified threshold. Positive ratios indicate that the peak at wavelength 1 is larger than the peak at wavelength 2. Negative ratios indicate that the peak at wavelength 2 is larger than the peak at wavelength 1. Set the ratio threshold (in AU) higher than the highest baseline noise level. This prevents the detector from interpreting a noisy baseline as a series of peaks. In general, the higher the baseline noise, the larger the ratio threshold setting. Valid range is 0.00001–2.00000.	0

Set Dual Ratio Threshold Command Properties

Set Scan Output Time

This command sets the Time it takes chart recorder to trace a wavelength scan on strip chart paper.

Properties

Set Scan Output Time Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector that the command will affect.	Detector
Scan Out Time	Time it takes chart recorder to trace a wavelength scan on strip chart paper (does not affect time to scan a peak). Valid range is 0.1–20 min.	0 sec

Set Scan Output Time Command Properties

Start File

This command runs a file that was created in the detector's software.

Properties

Start File Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector that the command will affect.	Detector
File Number	The number that corresponds to the detector file to run. Valid range is 0–9.	1

Start File Command Properties

Start Scan

This command initiates the scan between Wavelength 1 and Wavelength 2.

Properties

Start Scan Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector that the command will affect.	Detector

Start Scan Command Properties

Turn Lamp Saver Off

This command toggles the lamp saver option off.

Properties

Turn Lamp Saver Off Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector that the command will affect.	Detector

Turn Lamp Saver Off Command Properties

Turn Lamp Saver On

This command toggles the lamp saver option on. When the lamp saver option is on, the detector automatically turns off a lamp if it is not being used by the detector.

Properties

Turn Lamp Saver On Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector that the command will affect.	Detector

Turn Lamp Saver On Command Properties

Unlock Front Panel

Enables use of instrument's front panel during a run.

Properties

Lock Front Panel Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The detector that the command will affect.	Detector
Lock Front Panel Command Properties		

Wait for Display

For synchronization between injector program and TRILUTION. During the run, TRILUTION enters a wait state until the indicated message appears. When the message appears, TRILUTION continues the run.

Properties

Wait for Display Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	215SingleProbe
Message	The message that TRILUTION is waiting for from the injector program.	Test Message
Line	For two-line displays, indicate the line for which to monitor.	1
Alarm	Select TRUE and the computer will beep until the display message is detected. Select FALSE to inhibit beeping while waiting for the display message from the injector program.	FALSE

Wait for Display Command Properties

Write to Display

This command displays a message in the front panel display of the selected instrument.

Properties

Write to Display Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	215SingleProbe
Message	Enter the text to display on the Instrument's front panel.	Test Message
Line	For two-line displays, indicate the line on which to display the message.	1

Write to Display Command Properties

Fraction Collector Commands

The table below lists the commands for fraction collectors.

Fraction Collector Commands

Command Name and Description	*For detailed information:*
Advance This command moves the collection head to the next tube. This command has no properties to set.	See page C-34.
Close Output This command closes and powers on the specified output contact on a specified instrument.	See page C-35.
Home This command homes the specified instrument.	See page C-36.
Input Contact Status This command queries the status of the specified contact input for the specified instrument.	See page C-37.
Fraction Collector Commands Table *(Page 1 of 4)*	

Fraction Collector Commands (Continued)

Move Delta This command moves the arm in the X- and Y-direction as specified. This is used if the probe has to be moved to a position other than the center of the well. This command is used in the following circumstances: • Used in relatively large diameter wells to move from one position to another position within the well. • To move to different positions between the wells.	See page C-38.
Move To This command moves the Z-arm so that the probe will move to the specified well in the specified zone.	See page C-39.
Move XY This command moves the arm to a designated position.	See page C-40.
Open Output This command opens and powers off the specified output contact on a specified instrument.	See page C-41.
Output Contact Status This command queries the status of the specified contact output for the specified instrument.	See page C-42.
Fraction Collector Commands Table *(Page 2 of 4)*	

Fraction Collector Commands (Continued)

Set Collection and Travel Depth This command customizes probe (used as a dispense needle) movement during fraction collection.	See page C-43.
Set Fraction Site This command identifies where fraction collection will begin for an injected sample.	See page C-45.
Set Low Pressure Valve This command switches the low pressure valve to COLLECT for the duration specified.	See page C-44.
Set Non Peak Time Per Tube This command sets parameters for collecting non-peaks by time.	See page C-46.
Set Non Peak Volume Per Tube This command sets parameters for collecting non-peaks by volume.	See page C-47.
Set Peak Level This command sets the parameters for fraction collection by level.	See page C-48.
Set Peak Slope and Sensitivity This command sets the parameters for peak slope and peak sensitivity for peak integration and fraction collection.	See page C-49.
Set Time Per Tube This command sets parameters for collecting peaks by time.	See page C-51.
Fraction Collector Commands Table *(Page 3 of 4)*	

Fraction Collector Commands (Continued)

Set Volume Per Tube This command sets parameters for collecting peaks by volume.	See page C-52.
Sound This command causes the selected instrument to beep the duration.	See page C-53.
Start Collection This command tells TRILUTION LC to begin collecting fractions. This command has no properties to set.	See page C-54.
Stop Collection This command tells TRILUTION LC to stop collecting fractions. This command has no properties to set	See page C-55.
Wait for Contact State Change This command initiates a wait in the Method until a contact state change is detected of the specified input contact on the specified instrument.	See page C-56.
Fraction Collector Commands Table *(Page 4 of 4)*	

Advance

This command moves the collection head to the next tube. This command has no properties to set.

Close Output

This command closes and powers on the specified output contact on a specified instrument.

Properties

Close Output Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	Contacts
Contact ID	Enter the number that corresponds to the output contact to act on for the instrument selected.	1

Close Output Command Properties

Home

This command homes the specified instrument.

Properties

Home Command Properties

Property Name	*Description*	*Default Value*
InstrumentName	The instrument that the command will affect.	215SingleProbe

Home Command Properties

Input Contact Status

This command queries the status of the specified contact input for the specified instrument.

Properties

Input Contact Status Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	215SingleProbe
Contact ID	The input contact being queried. Valid range is A–D.	A

Input Contact Status Command Properties

Move Delta

This command moves the arm in the X- and Y-direction as specified. This is used if the probe has to be moved to a position other than the center of the well. This command is used in the following circumstances:

- Used in relatively large diameter wells to move from one position to another position within the well.
- To move to different positions between the wells.

Properties

Move Delta Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	215SingleProbe
X Target	Specify the required displacement of the arm in the X-direction from the current position of the arm. Positive number moves the arm to the right, from the current position. Negative number moves the arm to the left, from the current position.	100 mm
Y Target	Specify the required displacement of the arm in the Y-direction from the current position of the arm. Positive number moves the arm towards the front, from the current position. Negative number moves the arm backwards, from the current position.	100 mm

Move Delta Command Properties

Move To

This command moves the Z-arm so that the probe will move to the specified well in the specified zone.

Properties

Move To Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	215SingleProbe
Zone	The zone to move to.	Zone
Well	Enter the well number in the Zone.	1

Move To Command Properties

Move XY

This command moves the arm to a designated position.

Properties

Move XY Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	215SingleProbe
X Target	Specify the new X-coordinate for the arm.	100 mm
Y Target	Specify the new Y-coordinate for the arm.	100 mm

Move XY Command Properties

Open Output

This command opens and powers off the specified output contact on a specified instrument.

Properties

Close Output Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	Contacts
Contact ID	Enter the number that corresponds to the output contact to act on for the instrument selected.	1

Close Output Command Properties

Output Contact Status

This command queries the status of the specified contact output for the specified instrument.

Properties

Output Contact Status Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	215SingleProbe
Contact ID	The output contact being queried. Valid range is 1–6.	1

Input Contact Status Command Properties

Set Collection and Travel Depth

This command customizes probe (used as a dispense needle) movement during fraction collection.

Properties

Set Collection and Travel Depth Command Properties

Property Name	*Description*	*Default Value*
Collection Depth	The probe height used when dispensing into fraction sites. Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Valid range is Z travel distance and -1 where -1 is equal to the Z Clamp Height.	125 mm
Travel Depth	The probe height used when moving between fraction sites. Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). Valid range is Z travel distance and -1 where -1 is equal to the Z Clamp Height.	125 mm

Set Collection and Travel Depth Command Properties

Set Low Pressure Valve

This command switches the low pressure valve to COLLECT for the duration specified.

Properties

Set Low Pressure Valve Command Properties

Property Name	*Description*	*Default Value*
Duration	Length of time the low pressure valve will remain in the COLLECT position.	2 sec

Set Low Pressure Valve Command Properties

Set Fraction Site

This command identifies where fraction collection will begin for an injected sample.

Properties

Set Fraction Site Command Properties

Property Name	*Description*	*Default Value*
Fraction Instrument	The fraction collector that the command will affect.	215SingleProbe1
Zone	The zone in which fractions are collected.	Zone
Well	Enter the well number in the Zone in which collection will begin. The default of 0 is for continuous collection and fractions will always be collected in the next available tube.	1

Set Fraction Site Command Properties

Set Non Peak Time Per Tube

This command sets parameters for collecting non-peaks by time.

Properties

Set Non Peak Time Per Tube Command Properties

Property Name	*Description*	*Default Value*
Time	Enter the time to dispense at each tube.	10 sec

Set Non Peak Time Per Tube Command Properties

Set Non Peak Volume Per Tube

This command sets parameters for collecting non-peaks by volume.

Properties

Set Non Peak Volume Per Tube Command Properties

Property Name	*Description*	*Default Value*
Volume	Enter the maximum volume to be collected into each tube.	100 µL

Set Non Peak Volume Per Tube Command Properties

Set Peak Level

This command sets the parameters for fraction collection by level.

Properties

Set Peak Level Command Properties

Property Name	*Description*	*Default Value*
Level	The mV level above which all effluent is collected. This value is especially useful if the detector signal should go off-scale during collection.	0
Collect Positive Peaks	Turns on (TRUE) or off (FALSE) collection of positive peaks	TRUE
Collect Negative Peaks	Turns on (TRUE) or off (FALSE) collection of negative peaks	FALSE
Collect Non Peaks	Indicates if all effluent should be collected into tubes (TRUE) or not (FALSE)	FALSE

Set Peak Level Command Properties

Set Peak Slope and Sensitivity

This command sets the parameters for peak slope and peak sensitivity for peak integration and fraction collection.

Properties

Set Peak Slope and Sensitivity Command Properties

Property Name	*Description*	*Default Value*
Front Slope	Slope (in degrees) at half height of peak's ascending edge.	15
Front Slope Sensitivity	Used only Front Slope Sensitivity Auto Calculate is FALSE; sensitivity at half height of the peak's ascending edge. If few or no peaks are integrated, set a lower sensitivity value. If too many peaks are integrated, indicate a higher sensitivity value. For more information on values to enter, see **Peak Slope and Sensitivity** on page 7-14.	15
Front Auto Calculate	Enter TRUE for TRILUTION LC to determine the sensitivity appropriate for the peak front slope and peak width that you've typed. Enter FALSE to type the sensitivity value.	TRUE
Back Slope	Slope (in degrees) at half height of peak's descending edge.	15

Set Peak Slope and Sensitivity Command Properties Table *(Page 1 of 2)*

Set Peak Slope and Sensitivity Command Properties

Property Name	*Description*	*Default Value*
Back Slope Sensitivity	Used only when Back Auto Calculate is FALSE; sensitivity at half height of the peak's descending edge. This setting maximizes the amount of the peak that is integrated while minimizing the integration of baseline artifacts. If few or no peaks are integrated, set a lower sensitivity value. If too many peaks are integrated, indicate a higher sensitivity value. For more information on values to enter, see **Peak Slope and Sensitivity** on page 7-14.	15
Back Auto Calculate	Enter TRUE for TRILUTION LC to determine the sensitivity appropriate for the peak back slope and peak width that you've typed. Enter FALSE to type the sensitivity value.	TRUE
Collect Positive Peaks	Turns on (TRUE) or off (FALSE) collection of positive peaks	TRUE
Collect Negative Peaks	Turns on (TRUE) or off (FALSE) collection of negative peaks	FALSE
Collect Non Peaks	Indicates if all effluent should be collected into tubes (TRUE) or not (FALSE)	FALSE
Collect Co-eluted Peaks	Indicate whether co-eluted peaks should be collected (TRUE) or not (FALSE) where a co-eluted peak is characterized by a change in slope not identified as the Peak Front Slope or Peak Back Slope.	FALSE
Collection Region	Indicate whether the front of the slope to the apex (Front APEX), the apex to the tail (APEX Tail) or the entire peak (ALL) should be collected. To collect the entire peak, but advance to the next well at the apex, select APEX.	ALL

Set Peak Slope and Sensitivity Command Properties Table *(Page 2 of 2)*

Set Time Per Tube

This command sets parameters for collecting peaks by time.

Properties

Set Time Per Tube Command Properties

Property Name	*Description*	*Default Value*
Time	Enter the time to dispense at each tube.	10 sec

Set Time Per Tube Command Properties

Set Volume Per Tube

This command sets parameters for collecting peaks by volume.

Properties

Set Volume Per Tube Command Properties

Property Name	*Description*	*Default Value*
Volume	Enter the maximum volume to be collected into each tube.	100 µL

Set Volume Per Tube Command Properties

Sound

This command causes the selected instrument to beep the duration.

Properties

Sound Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	215SingleProbe
Duration	Length of time the instrument will beep once.	1 sec

Sound Command Properties

Start Collection

This command tells TRILUTION LC to begin collecting fractions. This command has no properties to set.

Stop Collection

This command tells TRILUTION LC to stop collecting fractions. This command has no properties to set

Wait for Contact State Change

This command initiates a wait in the Method until a contact state change is detected of the specified input contact on the specified instrument.

Properties

Wait for Contact State Change Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	215SingleProbe
Contact ID	The input contact being monitored for a state change. Valid range is A–D.	A
Alarm	Select TRUE and the computer will beep until the display message is detected. Select FALSE to inhibit beeping while waiting for the display message from the injector program.	FALSE

Wait for Contact State Change Command Properties

Injector Commands

The table below lists commands for injectors.

Injector Commands

Command Name and Description	*For detailed information:*
Set Injection Valve Position This command sets the injection valve position on the Injector to either LOAD or INJECT. **Injector Commands**	See page C-58.

Set Injection Valve Position

This command sets the injection valve position on the Injector to either LOAD or INJECT.

Properties

Set Injection Valve Position Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The injector or injection module that the command will affect.	Injector
Injection Valve Position	Select from LOAD or INJECT.	INJECT
Valve ID	Enter 1 to for the GX Z Injection Module. Enter 2 for the Left GX Direct Injection Module. Enter 3 for the Right GX Direct Injection Module.	1

Set Injection Valve Position Command Properties

Set Switching Valve Position

This command sets the switching valve position on the 233 XL Sample Injector to either LOAD or INJECT.

Properties

Set Switching Valve Position Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The name of the 233 XL Sample Injector that the command will affect.	Injector
Valve	Select from LOAD or INJECT.	INJECT

Set Switching Valve Position Command Properties

Liquid Handling Commands

The table below lists the commands for liquid handlers.

Liquid Handling Commands

Command Name and Description	*For detailed information:*
Aspirate This command draws liquid.	See page C-66.
Aspirate Air Gap This command aspirates an air gap.	See page C-68.
Aspirate Z-Inject This command draws injection volume into the Z-injection valve.	See page C-67.
Close Output This command closes and powers on the specified output contact on a specified instrument.	See page C-35.
Dispense This command delivers liquid.	See page C-69.
Dispense Air Gap This command delivers an air gap.	See page C-70.
Liquid Handling Commands Table *(Page 1 of 6)*	

Liquid Handling Commands (Continued)

Dispense Inject This command delivers injection volume into the injection port.	See page C-71.
Get Current Held Volume This command queries the software for the volume held in the syringe (if dilutor is present) or transfer tubing.	See page C-72.
Get Max Holding Volume This command queries the software for the syringe capacity (if dilutor is present) or transfer tubing volume.	See page C-73.
Home Needle This command homes the X/Y/Z on the specified liquid handler.	See page C-74.
Home Pump This command homes the pump on the GX Prep Solvent System.	See page C-75.
Home Syringes This command homes the external dilutor or the dilutor on a liquid handler.	See page C-76.
Input Contact Status This command queries the status of the specified contact input for the specified instrument.	See page C-37.
Liquid Handling Commands Table *(Page 2 of 6)*	

Liquid Handling Commands (Continued)

LLD This command detects the liquid level for the specified instrument. This command is used in the following circumstances:	See page C-77.
LLSeek This command moves the probe on the specified instrument to the new target Z position unless the liquid detector stops it first.	See page C-78.
Move Delta This command moves the arm in the X- and Y-direction as specified. This is used if the probe has to be moved to a position other than the center of the well. This command is used in the following circumstances: • Used in relatively large diameter wells to move from one position to another position within the well. • To move to different positions between the wells.	See page C-38.
Move To This command moves the Z-arm so that the probe will move to the specified well in the specified zone.	See page C-39.
Move XY This command moves the arm to a designated position.	See page C-40.
Liquid Handling Commands Table *(Page 3 of 6)*	

Liquid Handling Commands (Continued)

Move Z This command moves the probe on the specified instrument in the Z direction so that the probe is at the specified distance from the bottom of the well. The bottom of the well is always considered as Zero. Depending on the distance specified, the resultant movement can be either downward or upward relative to the current distance. This command is used in the following circumstances:	See page C-80.
Off 24V This command opens and powers off the 24V contact on a specified liquid handler.	See page C-82.
On 24V This command closes and powers on the 24V contact on a specified liquid handler.	See page C-83.
Open Output This command opens and powers off the specified output contact on a specified instrument.	See page C-41.
Output Contact Status This command queries the status of the specified contact output for the specified instrument.	See page C-42.
Prime This command primes the dilutor (if present) and primes the transfer tubing with reservoir solvent.	See page C-86.
Liquid Handling Commands Table *(Page 4 of 6)*	

Liquid Handling Commands (Continued)

Pulse Output This command pulses the specified output contact on a specified instrument.	See page C-84.
Read Display This command reads the message on the front panel display of the selected instrument and then records it in the log file.	See page C-17.
Record Display This command reads the message on the front panel display of the selected instrument and then records it in the Analysis Report.	See page C-18.
Rinse Pump Turns the specified rinse pump on (HIGH or LOW) or turns it off.	See page C-85.
Scan Bar Codes This command scans the racks on the locator plate of the Liquid Handler specified (currently only available for the GX-281 Liquid Handler) for the purpose of ensuring that the rack hardware setup matches the software rack (Bed Layout) setup.	See page C-87.
Sound This command causes the selected instrument to beep the duration.	See page C-53.
Wait for Contact State Change This command initiates a wait in the Method until a contact state change is detected of the specified input contact on the specified instrument.	See page C-56.
Liquid Handling Commands Table *(Page 5 of 6)*	

Liquid Handling Commands (Continued)

Wait for Display For synchronization between injector program and TRILUTION. During the run, TRILUTION enters a wait state until the indicated message appears. When the message appears, TRILUTION continues the run.	See page C-28.
Write to Display This command displays a message in the front panel display of the selected instrument.	See page C-29.
Liquid Handling Commands Table *(Page 6 of 6)*	

Aspirate

This command draws liquid.

Properties

Aspirate Command Properties

Property Name	*Brief Description*	*Default Value*
Instrument Name	The pump that the command will affect. If your liquid handler has an internal dilutor, select the liquid handler.	215SingleProbe
Valve Position	Select from either PROBE or RESERVOIR. Not used for the GX-281 Liquid Handler.	RESERVOIR
Volume	The quantity of liquid to be aspirated.	500 µL
Flow Rate	The speed at which the volume moves into the probe(s).	3 mL/min
Use LLF	Used only when Valve Position = PROBE is selected; select TRUE and the probe will follow the liquid down as it is aspirated. The Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated.	FALSE
LH Instrument	The liquid handler that the command will affect.	215SingleProbe

Aspirate Command Properties

Aspirate Z-Inject

This command draws injection volume into the Z-injection valve.

Properties

Aspirate Z-Inject Command Properties

Property Name	*Brief Description*	*Default Value*
Instrument Name	The pump that the command will affect. If your liquid handler has an internal dilutor, select the liquid handler.	215SingleProbe
Valve Position	Select from either PROBE or RESERVOIR. Not used for the GX-281 Liquid Handler.	RESERVOIR
Volume	The quantity of liquid to be aspirated.	500 µL
Flow Rate	The speed at which the volume moves into the probe(s).	3 mL/min
Use LLF	Used only when Valve Position = PROBE is selected; select TRUE and the probe will follow the liquid down as it is aspirated. The Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid down as it is aspirated.	FALSE
LH Instrument	The liquid handler that the command will affect.	215SingleProbe

Aspirate Z-Inject Command Properties

Aspirate Air Gap

This command aspirates an air gap.

Properties

Aspirate Air Gap Command Properties

Property Name	*Brief Description*	*Default Value*
Instrument Name	The liquid handler that the command will affect.	215SingleProbe
Air Gap Volume	The quantity of liquid to be aspirated.	100 µL
Air Gap Flow Rate	The speed at which the volume moves into the probe(s).	10 mL/min

Aspirate Air Gap Command Properties

Dispense

This command delivers liquid.

Properties

Dispense Command Properties

Property Name	*Description*	*Value*
Instrument Name	The pump that the command will affect. If your liquid handler has an internal dilutor, select the liquid handler.	215SingleProbe
Volume	The quantity of liquid to be dispensed.	500
Flow Rate	The speed at which the volume moves out of the probe(s).	10
Use LLF	Select TRUE and the probe will follow the liquid up as it is dispensed. The Z Option must be set to AUTO CALCULATE and initial volumes must be set in the Sample List to use this option. Select FALSE and the probe will not follow the liquid up as it is dispensed.	FALSE
LH Instrument	The liquid handler that the command will affect.	215SingleProbe
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	1

Dispense Command Properties

Dispense Air Gap

This command delivers an air gap.

Properties

Dispense Air Gap Command Properties

Property Name	*Brief Description*	*Default Value*
Instrument Name	The liquid handler that the command will affect.	215SingleProbe
Air Gap Volume	The quantity of liquid to be aspirated.	100 µL
Air Gap Flow Rate	The speed at which the volume moves into the probe(s).	10
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	1

Dispense Air Gap Command Properties

Dispense Inject

This command delivers injection volume into the injection port.

Properties

Dispense Inject Command Properties

Property Name	*Brief Description*	*Default Value*
Instrument Name	The pump that the command will affect. If your liquid handler has an internal dilutor, select the liquid handler.	215SingleProbe
Volume	The quantity of liquid to be aspirated.	500 µL
Flow Rate	The speed at which the volume moves into the probe(s).	10 mL/min
LH Instrument	The liquid handler that the command will affect.	215SingleProbe
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	1

Dispense Inject Command Properties

Get Current Held Volume

This command queries the software for the volume held in the syringe (if dilutor is present) or transfer tubing.

Properties

Get Current Held Volume Command Properties

Property Name	*Brief Description*	*Default Value*
Instrument Name	The liquid handler that the command will affect.	215SingleProbe

Get Current Held Volume Command Properties

Get Max Holding Volume

This command queries the software for the syringe capacity (if dilutor is present) or transfer tubing volume.

Properties

Get Max Holding Volume Command Properties

Property Name	*Brief Description*	*Default Value*
Instrument Name	The liquid handler that the command will affect.	215SingleProbe

Get Max Holding Volume Command Properties

Home Needle

This command homes the X/Y/Z on the specified liquid handler.

Properties

Home Needle Command Properties

Property Name	*Brief Description*	*Default Value*
Instrument Name	The liquid handler that the command will affect.	215SingleProbe

Home Needle Command Properties

Home Pump

This command homes the pump on the GX Prep Solvent System.

Properties

Home Pump Command Properties

Property Name	*Brief Description*	*Default Value*
Instrument Name	The liquid handler that the command will affect.	GX-281

Home Pump Command Properties

Home Syringes

This command homes the external dilutor or the dilutor on a liquid handler.

Properties

Home Syringes Command Properties

Property Name	*Brief Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	215SingleProbe

Home Syringes Command Properties

LLD

This command detects the liquid level for the specified instrument. This command is used in the following circumstances:

- To move the probe in the Z direction depending on the height of the liquid in the well.
- To move the probe just to the top of the sample. This can be achieved through LLF command also.
- To aspirate only on confirming the presence of the sample in the well.

Properties

LLD Command Properties

Property Name	*Brief Description*	*Default Value*
Instrument Name	The liquid handler that the command will affect.	215SingleProbe

LLD Command Properties

LLSeek

This command moves the probe on the specified instrument to the new target Z position unless the liquid detector stops it first.

Properties

LLSeek Command Properties

Property Name	*Brief Description*	*Default Value*
Instrument Name	The liquid handler that the command will affect.	215SingleProbe
Z Target	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Z Option.	1 mm

LLSeek Command Properties Table *(Page 1 of 2)*

LLSeek Command Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Speed	The rate at which the Z-arm moves.	170 mm/sec
Z Option	One of five defined reference points, selected from a drop-down list, used when performing the move: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Z Offset.	ABSOLUTE VALUE

LLSeek Command Properties Table *(Page 2 of 2)*

Move Z

This command moves the probe on the specified instrument in the Z direction so that the probe is at the specified distance from the bottom of the well. The bottom of the well is always considered as Zero. Depending on the distance specified, the resultant movement can be either downward or upward relative to the current distance. This command is used in the following circumstances:

- To move the specified probe(s) in the Z direction.

Properties

Move Z Command Properties

Property Name	*Brief Description*	*Default Value*
Instrument Name	The liquid handler that the command will affect.	215SingleProbe
Z Target	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Z Option.	1 mm

Move Z Command Properties Table *(Page 1 of 2)*

Move Z Command Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Speed	The rate at which the Z-arm moves.	170 mm/sec
Z Option	One of five defined reference points, selected from a drop-down list, used when performing the move: **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) or negative (-) value for the Z Offset. **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Z Offset values to move up from the bottom. **Top:** Moves probe to the top of their Z-travel range; accepts only a negative (-) value for the Z Offset. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Z Offset.	ABSOLUTE VALUE

Move Z Command Properties Table *(Page 2 of 2)*

Off 24V

This command opens and powers off the 24V contact on a specified liquid handler.

Properties

Off 24V Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The liquid handler that the command will affect.	215SingleProbe
Contact ID	Enter the number that corresponds to the 24V output contact to act on for the liquid handler selected.	1

Off 24V Command Properties

On 24V

This command closes and powers on the 24V contact on a specified liquid handler.

Properties

On 24V Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The liquid handler that the command will affect.	215SingleProbe
Contact ID	Enter the number that corresponds to the 24V output contact to act on for the liquid handler selected.	1

On 24V Command Properties

Pulse Output

This command pulses the specified output contact on a specified instrument.

Properties

Pulse Output Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	Contacts
Contact ID	Enter the number that corresponds to the output contact to act on for the instrument selected.	1
Duration	The time the program will wait between output state toggle.	1 sec

Pulse Output Command Properties

Rinse Pump

Turns the specified rinse pump on (HIGH or LOW) or turns it off.

Properties

Rinse Pump Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	GX-281
Rinse Speed	Select HIGH, LOW, or OFF.	OFF
Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1

Rinse Pump Command Properties

Prime

This command primes the dilutor (if present) and primes the transfer tubing with reservoir solvent.

Properties

Prime Command Properties

Property Name	*Description*	*Default Value*
InstrumentName	The pump that the command will affect. If your liquid handler has an internal dilutor, select the liquid handler.	215SingleProbe
Speed	The speed at which the solvent moves into the syringe and then out of the probe.	10 mL/min
Iteration	Enter the number of times to repeat aspirating (with dilutor only) and dispensing.	1
Solvent Valve Position	Desired position of the solvent selection valve on the GX Prep Solvent System. Valid range is 1–6. The position designated for waste cannot be used for a solvent.	1

Prime Command Properties

Scan Bar Codes

This command scans the racks on the locator plate of the Liquid Handler specified (currently only available for the GX-281 Liquid Handler) for the purpose of ensuring that the rack hardware setup matches the software rack (Bed Layout) setup.

Properties

Scan Bar Codes Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	GX-281

Scan Bar Codes Command Properties

Mobile Phase Commands

The table below lists the commands for the pumps.

Mobile Phase Commands

Command Name and Description	*For detailed information:*
Close Output This command closes and powers on the specified output contact on a specified instrument.	See page C-35.
Input Contact Status This command queries the status of the specified contact input for the specified instrument.	See page C-37.
Open Output This command opens and powers off the specified output contact on a specified instrument.	See page C-41.
Output Contact Status This command queries the status of the specified contact output for the specified instrument.	See page C-42.
Pulse Output This command pulses the specified output contact on a specified instrument.	See page C-84.
Mobile Phase Commands Table *(Page 1 of 2)*	

Mobile Phase Commands (Continued)

Service Heads This command is used when replacing or servicing the pump heads.	See page C-90.
Set Flow Rate This command starts the specified pump pumping at the specified flow rate.	See page C-91.
Solvent Valve This command changes the position of the solvent selection valve on a pump (if installed) or on the GX Prep Solvent System.	See page C-92.
Wait for Contact State Change This command initiates a wait in the Method until a contact state change is detected of the specified input contact on the specified instrument.	See page C-56.
Mobile Phase Commands Table *(Page 2 of 2)*	

Service Heads

This command is used when replacing or servicing the pump heads.

Properties

Service Heads Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	Pump
Mount Heads	Select TRUE to mount the heads. Select FALSE move the pump head pistons to the dismount position.	FALSE

Service Heads Command Properties

Set Flow Rate

This command starts the specified pump pumping at the specified flow rate.

Properties

Set Flow Rate Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	Pump
Flow Rate	The total flow rate from the specified pump.	0

Set Flow Rate Command Properties

Solvent Valve

This command changes the position of the solvent selection valve on a pump (if installed) or on the GX Prep Solvent System.

Properties

Solvent Valve Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	Pump
Solvent Valve Position	Desired position of the solvent selection valve on the pump or GX Prep Solvent System. Valid range is 1–6. The position designated for waste on the GX Prep Solvent System cannot be used for a solvent.	1

Solvent Valve Command Properties

Switching Valve Commands

The table below lists the commands for instruments with switching valves (i.e., VALVEMATE).

Switching Valve Commands

Command Name and Description	*For detailed information:*
Home This command homes the specified instrument.	See page C-36.
Lock Front Panel Inhibits use of instrument's front panel during a run.	See page C-10.
Read Position This command reads the position of the switching valve and then records it in the log file.	See page C-94.
Set Position This command sets the position of the switching valve.	See page C-95.
Unlock Front Panel Enables use of instrument's front panel during a run.	See page C-27.
Switching Valve Commands	

Read Position

This command reads the position of the switching valve and then records it in the log file.

Properties

Read Position Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	Valvemate
Position	Indicates how the current position should be displayed in the log file. Select either ALPHANUMERIC or NUMERIC.	ALPHANUMERIC

Read Position Command Properties

Set Position

This command sets the position of the switching valve.

Properties

Set Position Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	Valvemate
Position	Desired position of the switching valve. Valid range is 0–7 and A–D. **Note:** When using a 2-position valve, choose 0 for position 1 or 1 for position 2.	1

Set Position Command Properties

System Commands

The table below lists the System commands.

System Commands

Command Name and Description	*For detailed information:*
Execute This command invokes an external application.	See page C-98.
GSIOC This command sends a GSIOC command to the specified instrument.	See page C-99.
GSIOC with ID This command sends a GSIOC command to an instrument at the specified unit ID.	See page C-100.
Prompt This command displays a prompt dialog with the selected message.	See page C-101.
Prompt for Input This command is used in an expression. When the Application is run, a dialog is displayed with an input field and an OK button. How this input is used is dependent on the expressions used.	See page C-102.
Synchronize This command is used to coordinate a step in a Task with a time in a Method.	See page C-103.
System Commands Table *(Page 1 of 2)*	

System Commands (Continued)

Wait This command waits a specified length of time.	See page C-104.
Wait with Display This command waits a specified length of time and displays an optional message.	See page C-105.
System Commands Table *(Page 2 of 2)*	

Execute

This command invokes an external application.

Properties

Execute Command Properties

Property Name	*Description*	*Default Value*
Path and Name	File path to which the Command Line Parameters are sent. Click ... to browse for the executable program.	
Command Line Parameters	The information sent to the program located at the Path and Name.	

Execute Command Properties

GSIOC

This command sends a GSIOC command to the specified instrument.

Properties

GSIOC Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	System
Command	The string that sends an instruction to the Instrument.	
Type	The command type: BUFFERED or IMMEDIATE.	IMMEDIATE

GSIOC Command Properties

GSIOC with ID

This command sends a GSIOC command to an instrument at the specified unit ID.

Properties

GSIOC with ID Command Properties

Property Name	*Description*	*Default Value*
Unit ID	The unit ID of the instrument that the command will affect.	1
Command	The string that sends an instruction to the Unit ID.	
Type	The command type: BUFFERED or IMMEDIATE.	IMMEDIATE

GSIOC with ID Command Properties

Prompt

This command displays a prompt dialog with the selected message.

Properties

Prompt Command Properties

Property Name	*Description*	*Default Value*
Message	Enter the text to display in the message box.	

Prompt Command Properties

Prompt for Input

This command is used in an expression. When the Application is run, a dialog is displayed with an input field and an OK button. How this input is used is dependent on the expressions used.

Synchronize

This command is used to coordinate a step in a Task with a time in a Method.

Properties

Synchronize Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The instrument that the command will affect.	System

Synchronize Command Properties

Wait

This command waits a specified length of time.

Properties

Wait Command Properties

Property Name	*Brief Description*	*Default Value*
Wait Time	Time the program waits before starting the next command.	1 sec

Wait Command Properties

Wait with Display

This command waits a specified length of time and displays an optional message.

Properties

Wait with Display Command Properties

Property Name	*Brief Description*	*Default Value*
Message	Enter the text to display in the message box during the wait time.	
Wait Time	Time the program waits before starting the next command.	10 sec

Wait with Display Command Properties

System Interface Commands

The table below lists the commands for System Interfaces (i.e., 506C System Interface).

System Interface Commands

Command Name and Description	*For detailed information:*
Clear Channel This command clears the FIFO for the selected analog input channel on the 506C System Interface.	See page C-108.
Close Output This command closes and powers on the specified output contact on a specified instrument.	See page C-35.
Input Contact Status This command queries the status of the specified contact input for the specified instrument.	See page C-37.
Open Output This command opens and powers off the specified output contact on a specified instrument.	See page C-41.
Output Contact Status This command queries the status of the specified contact output for the specified instrument.	See page C-42.
System Interface Commands Table *(Page 1 of 2)*	

System Interface Commands (Continued)

Pulse Output This command pulses the specified output contact on a specified instrument.	See page C-84.
Wait for Contact State Change This command initiates a wait in the Method until a contact state change is detected of the specified input contact on the specified instrument.	See page C-56.
Zero Analog Offset Voltage This command sets the selected 506C System Interface channel's trace to 0 mV.	See page C-109.
System Interface Commands Table *(Page 2 of 2)*	

Clear Channel

This command clears the FIFO for the selected analog input channel on the 506C System Interface.

Properties

Clear Channel Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The 506C System Interface that the command will affect.	Contacts
Channel	The analog input channel to clear. Valid range is A–D (up to four at once).	A
Clear Channel		

Zero Analog Offset Voltage

This command sets the selected 506C System Interface channel's trace to 0 mV.

Properties

Zero Analog Offset Voltage Command Properties

Property Name	*Description*	*Default Value*
Instrument Name	The 506C System Interface that the command will affect.	Contacts
Channel	The analog input channel to zero. Valid range is A–D (up to four at once).	A
Zero Analog Offset Voltage		

Bed Layout Utility

D

Access the Bed Layout Utility by choosing Liquid Chromatography and Fraction Collection|Utilities|Bed Layout.

Creating Custom Templates

Design your template with footprints. You can select pre-defined footprints or define your footprints.

Information stored concerning the template includes its physical dimensions and the origin (where 0,0,0 is).

Keywords:

- **Template**: The bottom, required layer of a Bed Layout. Only footprints can be added to templates.
- **Origin**: Defined by the user, the location of the coordinates X=0, Y=0, Z=0.
- **Footprint**: Area that accepts racks.
- **Rack**: A rack requires a footprint before it can be added to a template. Examples of racks are racks, Rinse Stations, Injection Port Bars, Tip Boxes, and Microplates.

Creating a Template

To create a new template:

1 Click **NEW**.

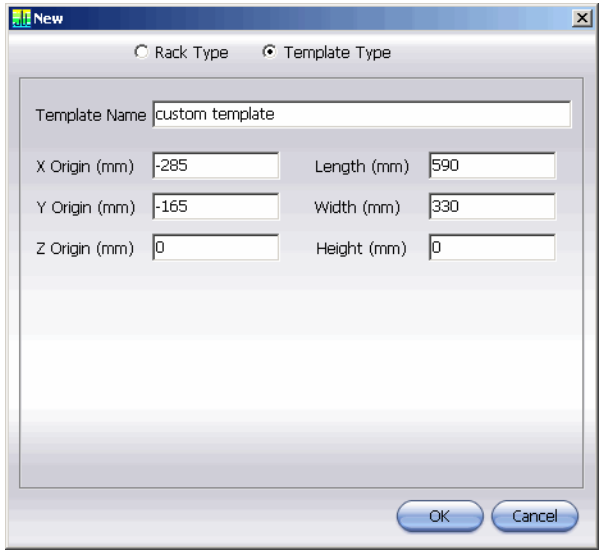
2 Select the ***Template Type*** option button.

3 In the ***Template Name*** field, type a unique name.

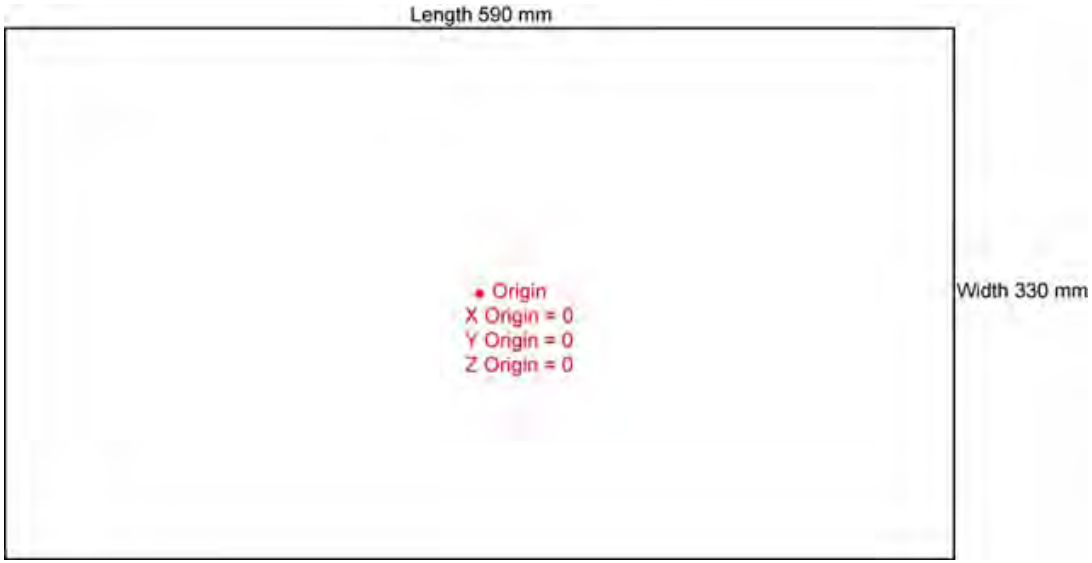
4 Enter the template dimensions and set the origin.

5 Click **OK**.

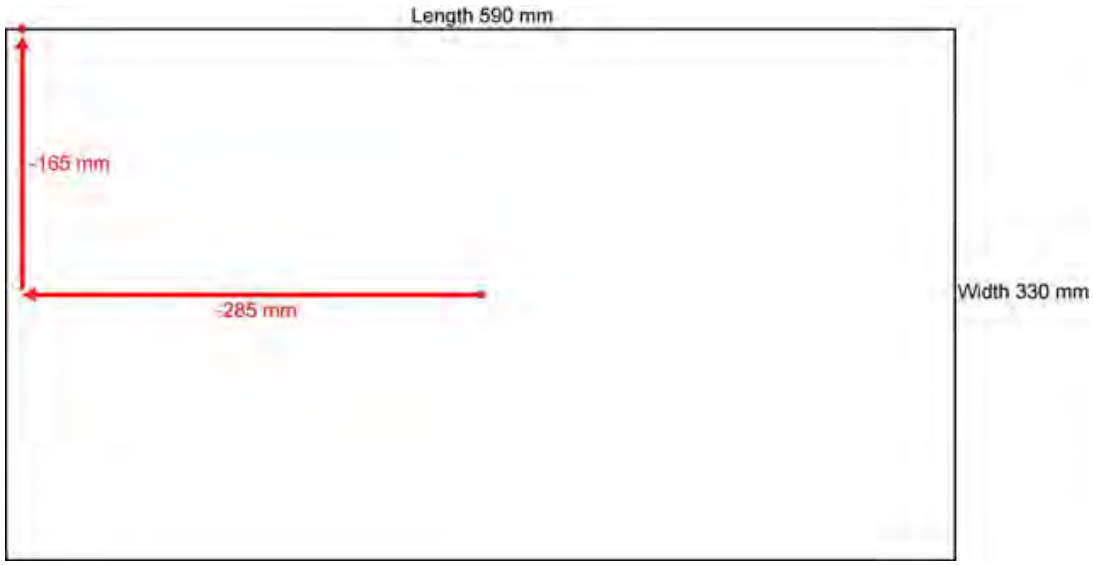
6 Save the template: click **SAVE AS**.



Template Type Option Selected (Default Settings Shown)



Origin (X Origin=0, Y Origin=0, Z Origin=0)



Move X-285 and Y-165

Origin (Default Settings Applied)

Adding a Footprint

A footprint is an area that accepts racks. Gilson supplies footprints and custom footprints can be created.

Adding a single footprint

1 Right-click on a template and then select Add Elements.

2 Select a footprint.

3 Enter the Relative X, Y, and Z positions.

The position is calculated with respect to the center of the template (which may or may not be 0,0,0 depending on where the origin was set).

When X = 0 and Y= 0, the center of the element is situated over the center of the template.

4 When Z = 0, the bottom of the element is placed at the same level as the top of the template.

5 Optionally, select the Rotated check box to rotate the element 90° on its axis.

6 Click **ADD**. Confirmation that the element was added is noted in the Info Window.

7 Click **OK** or **CANCEL** to exit the dialog.

Adding multiple footprints

This option allows you to add an array of identical footprints to a template.

1 Right-click on a template and then select Add Elements.

2 Click on the element that you want to add as an array.

3 Select the Multiple check box to enable the necessary fields.

4 Enter the Relative X, Y, and Z position for the center of the element in column 1, row 1.

   The position is calculated with respect to the center of the template (which may or may not be 0,0,0 depending on where the origin was set).

   When X = 0 and Y= 0, the footprint in column 1, row 1 is centered over the center of the template.

5 Specify the number of columns and the number of rows.

6 Specify the distance between wells within a column (Y Offset) and the distance between wells within a row (X Offset).

7 Optionally, select the Rotated check box to rotate each element 90° on its axis.

8 Click **ADD MULTIPLE**. Confirmation that the elements were added is noted in the Info Window.

9 Click **OK** to add the elements.

Creating a Footprint on a Template

Footprints can be created for non-standard racks.

Creating a Footprint

1 Right-click the template and select Add Elements.

2 In the Custom tree, click on Footprint and then click **NEW**.

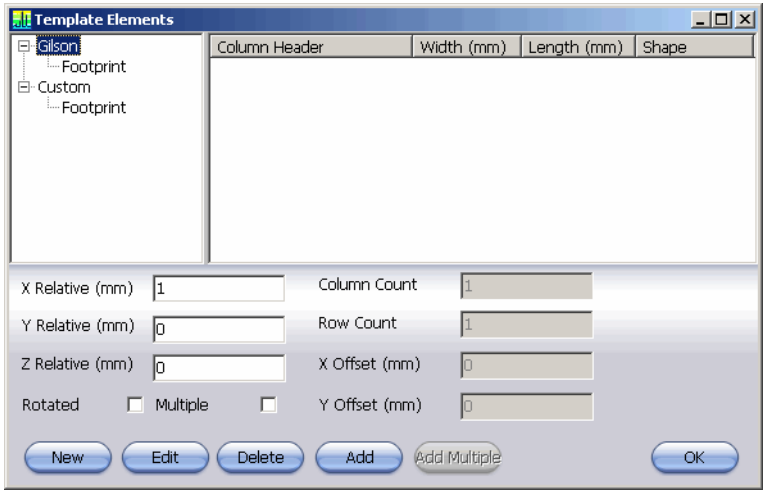
3 Enter a Footprint Name for the footprint.

4 Select the Shape: Rectangle or Circle.

   a) For a rectangle, enter the Length and Width.

   b) For a circle, enter the Diameter.

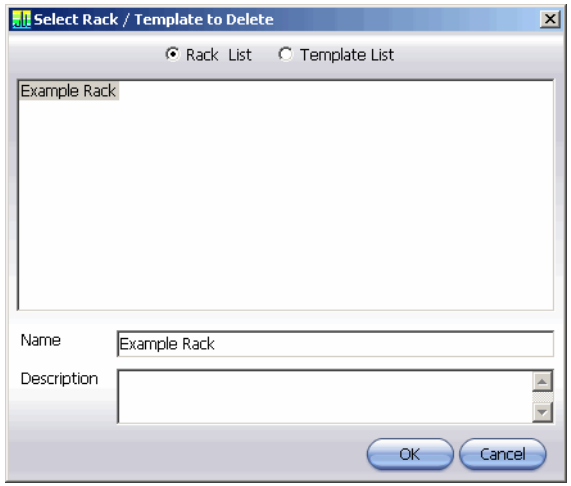
5 Click **OK**.



The Template Elements Dialog

Deleting a Template

1 On the Bed Layout Utility, click **DELETE**. The Select Rack/Template to Delete window is displayed.



The Select Bed Layout to Delete Window

2 On the Select Rack/Template to Delete window, select the Template List option button.

3 Select a template and then click **OK**. The template is deleted.

Creating Custom Rack Elements

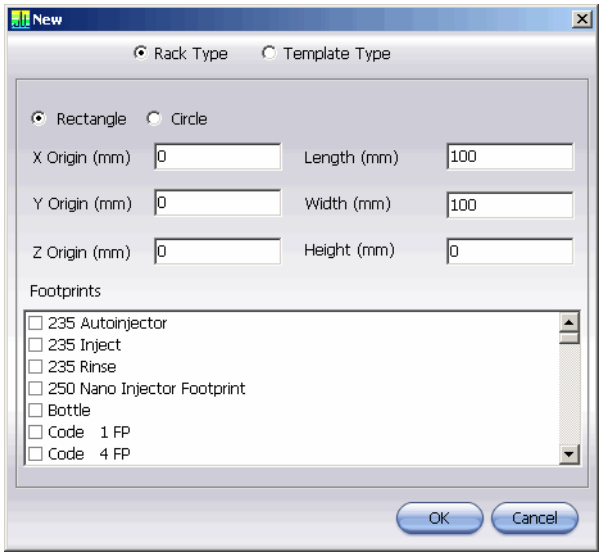
Design your rack, its dimensions and the elements or wells. You can select pre-defined wells, or define your own elements and wells. You can add single wells (or elements) or add arrays of wells or elements.

Information stored concerning the rack includes its physical dimensions, the type of wells that it holds and where they are located, and the template footprints where the rack can be placed.

Keywords:

- **Element**: A rack element is a footprint or a well.
- **Footprint**: Area that accepts racks.
- **Wells**: Wells (specifically custom wells) can only go in racks.
- **Rack**: A rack requires a footprint before it can be added to a template. Examples of racks are racks, Rinse Stations, Injection Port Bars, Tip Boxes, and Microplates.
- **Template**: The bottom, required layer of a Bed Layout. Only footprints can be added to templates.
- **Handle**: A position designated in a rack which makes the rack mobile. Zones cannot be assigned to a handle.
- **Target**: A position defined within a well. Zones can be assigned to a target.

Creating a Rack



When you select the Rack option button, the rack parameters dialog displays.

1 Set the rack shape: Circle or Rectangle, and enter the dimensions.

   a) For a circular rack, define the diameter and the height.

   b) For a rectangular rack, define X (width), Y (length) and the height.

   The rack height is measured with respect to the point of contact between the rack and its holder.

   For a rack placed on a template, 'Height' is measured with respect to the rack bottom.

   For a rack placed on antlers, 'Height' is measured with respect to the underside of the rack tabs. A height of 0 means that the top of the rack is level with the plane of the support.

   This reference is important, when a footprint or well is added to a custom rack, the height Z is calculated with respect to this plane. Also, the probe height in a custom rack is calculated with respect to this plane.

   You must be very careful when designing a custom rack that can be placed on antlers and on a tray, as the probe height in tasks will be calculated with respect to this coordinate.

2 Enter the coordinates for the rack Origin. The default is 0,0,0 which is the center of the rack.

3 Select the footprint(s) where the rack can be placed. You can select several footprints.

4 Click **OK**.

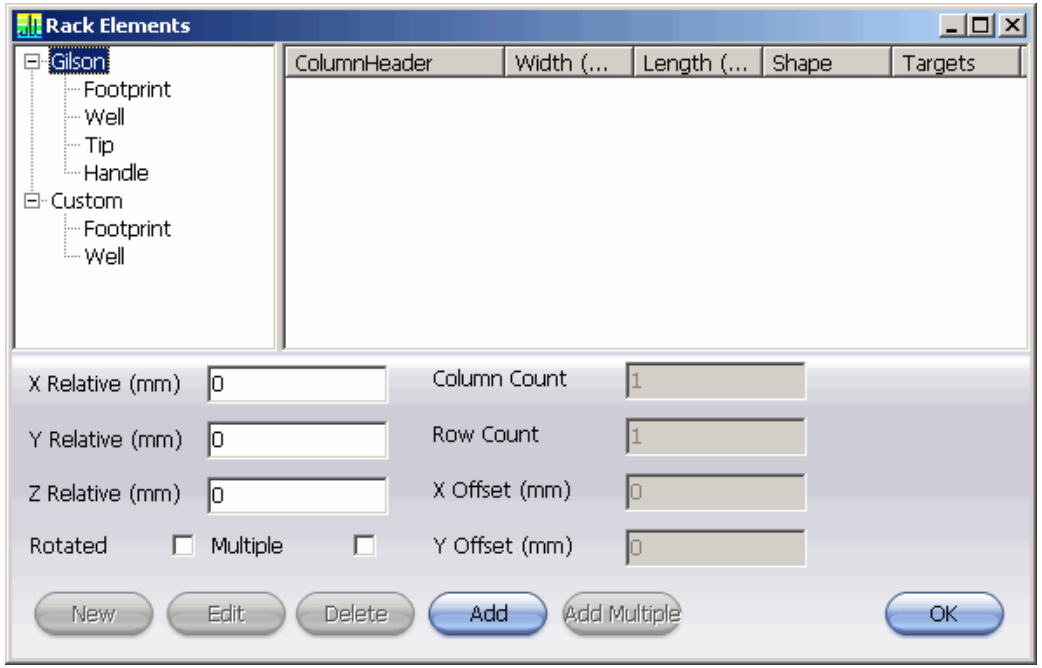
Adding the Elements

You can add a single element at a time or you can add arrays of elements.

Adding a single element

1 Right-click on a rack and then select **ADD ELEMENTS**.

2 Select an element: Gilson Footprint, Gilson Well, Gilson Tip, Gilson Handle, Custom Footprint, or Custom Well.



The Rack Elements Dialog

3 Enter the Relative X, Y, and Z positions*.

4 Optionally, select the Rotated check box to rotate the element 90° on its axis.

5 Click **ADD**. Confirmation that the element was added is noted in the Info Window.

6 Click **OK** to add the element.

* The position is calculated with respect to the rack center.

When X = 0 and Y= 0, the center of the element is positioned over the center of the rack.

When Z = 0, the bottom of the element is placed at the same level as the top of the rack: level with the point of contact between the rack and its holder (tray or antler).

Adding multiple elements

This option allows you to add an array of identical elements to a rack.

1 Right-click on a rack and then select **ADD ELEMENT**.

2 Click on the element that you want to add as an array (footprint or well)

3 Select the Multiple check box to enable the necessary fields.

4 Enter the Relative X, Y, and Z position* for the center of the element in column 1, row 1.

5 Specify the number of columns and the number of rows.

6 Specify the distance between wells within a column (Y Offset) and the distance between wells within a row (X Offset).

7 Optionally, select the Rotated check box to rotate each element 90° on its axis.

8 Click **ADD MULTIPLE**. Confirmation that the elements were added is noted in the Info Window.

9 Click **OK** to add the elements.

* The position is calculated with respect to the rack center.

When X = 0 and Y= 0, the element in column 1, row 1 is centered over the center of the rack.

When Z = 0, the bottom of the element is placed at the same level as the top of the rack: level with the point of contact between the rack and its holder (tray or antler).

Creating a New Element

Elements can be created for non-standard equipment.

Creating a Footprint

1 Right-click on a rack and then select Add Element.
2 In the Custom tree, click Footprint and then click **NEW**.
3 Enter a Footprint Name for the footprint.
4 Select the Shape: Rectangle or Circle.

a) For a circle, enter the Diameter.

b) For a rectangle, enter the Length and Width.

5 Click **OK**.

Creating a Well

1 Right-click on a rack and then select Add Element.
2 In the Custom tree, click Well and then click **NEW**.
3 Enter a Well Name for the well.

4 Select the Shape: Rectangle or Circle.

   a) For a circular well, enter the Diameter, Height, and Maximum Volume for the well.

   b) For a rectangular well, enter the Length, Width, Height, and Maximum Volume for the well.

   Maximum Volume must be a number other than zero (0).

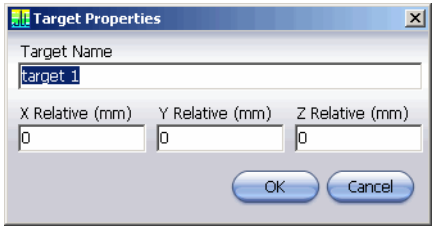
5 Click **OK**.

Creating a Target

1 Right-click on a rack and then select Add Element.

2 In the Custom tree, click Well and then click **NEW** or **EDIT**. (Must also select a well before clicking **EDIT**.) The Well Properties dialog is displayed.

3 Right-click in the Targets grid and select **ADD**.



The Target Properties Dialog

4 Enter a Target Name for the target.

5 Enter the relative X, Y, and Z positions for the target. The position is calculated with respect to the center of the well.

6 Click **OK** to exit the Target Properties dialog.

Modifying a Target

1 Right-click on a rack and then select Add Element.

2 In the Custom tree, select the Well that contains the Target and then click **EDIT**. The Well Properties dialog is displayed.

3 Right-click on the Target and select **EDIT**.

4 Change the Target Name for the target, if desired.

5 Change the relative X, Y, and Z positions for the target, if desired. The position is calculated with respect to the center of the well.

6 Click OK to exit the Target Properties dialog.

Deleting a Target

1 Right-click on a rack and then select Add Element.

2 In the Custom tree, select the Well that contains the Target and then click **EDIT**. The Well Properties dialog is displayed.

3 Right-click on the Target and select **DELETE**.

4 Click OK to exit the Target Properties dialog.

Editing a Custom Element

You can perform the following editing actions.

Viewing Elements

1 To view the element properties, right-click on the element and select Properties.
2 Select the Advanced check box to view the attributes for the element.

The relative coordinates display. The coordinates are relative to the center of the holder.

Moving a single element

1 Right-click on the element and select Properties.
2 Change the appropriate position coordinates.

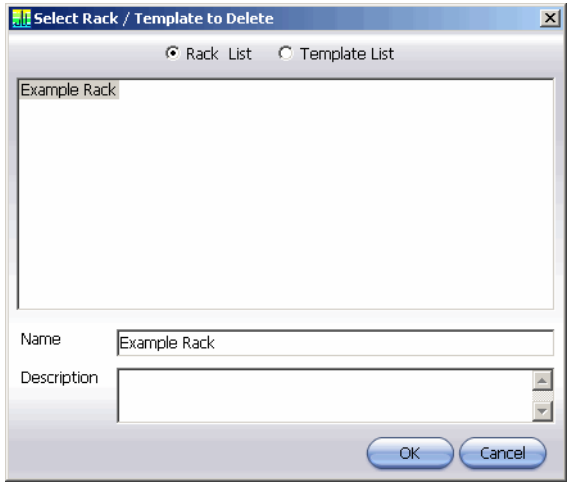
Deleting an Element

You can only delete user-defined elements.

1 Open the Rack Elements dialog: right-click on an element, then select Add Element.
2 Click on the type of custom element that you want to delete: a footprint or a well.
3 Select the specific element you want to delete from the list.
4 Click **DELETE**.

Deleting a Rack

1 With a rack open, click **DELETE**. The Select Rack/Template to Delete window is displayed.



The Select Rack/Template to Delete Window

2 On the Select Rack/Template to Delete window, select the Rack List option button.

3 Select a rack and then click **OK**. The rack is deleted.

Exporting a Bed Layout

To export a Bed Layout

1 In the Bed Layout Utility, click **EXPORT**.

2 Select a Bed Layout.

> **To select multiple Tasks in a sequential order, hold SHIFT + any arrow key simultaneously.**
>
> **To select Tasks in a random order, hold CTRL and select multiple Tasks with the mouse.**

3 In the ***Select Path*** field, do the following:

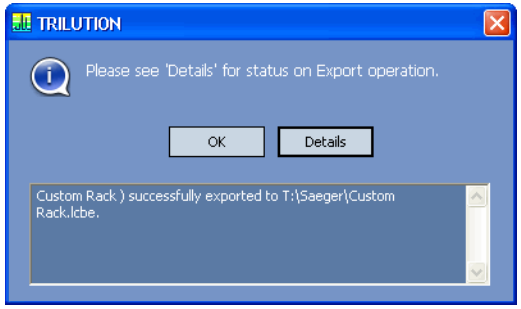
a) Click . The Browse For Folder window is displayed.

> **You can create a new folder from the Browse For folder window.**

b) On the Browse For Folder window, select a folder and then click **OK**.

4 Click **OK**. On completion of the export operation, the Bed Layout is saved in the specified folder with a .LCBE extension. The TRILUTION information dialog box is displayed.

> **If a Bed Layout with the same name is found in the Export path, an option is provided to rename or overwrite the Bed Layout or to skip the Export operation for that Bed Layout.**



The TRILUTION information dialog box

a) On the TRILUTION information dialog box, do the following:

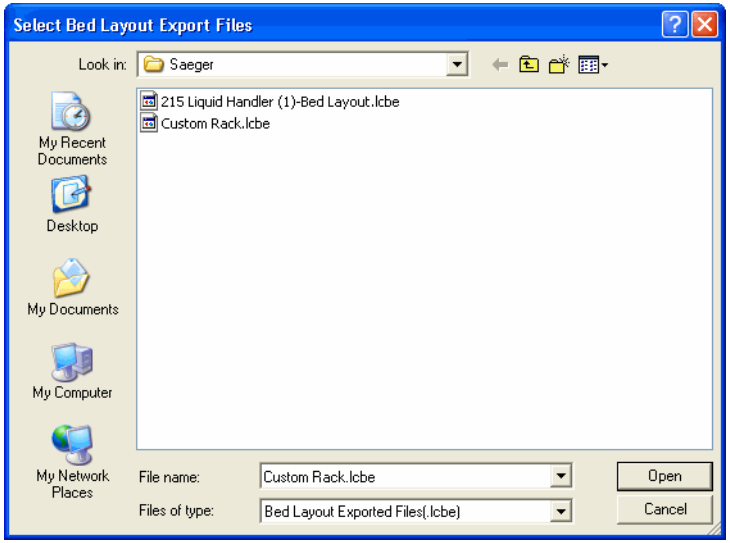
1) To view the log information of the export operation, click **DETAILS**.

2) Click **OK**.

Importing a Bed Layout

To import a Bed Layout

1 In the Bed Layout Utility, click **IMPORT**. The Select Bed Layout Export Files window is displayed.



The Select Bed Layout Export Files window

2 From the Select Bed Layout Export Files window, do the following:

a) Browse for and select the Bed Layout Exported Files.

To select multiple Bed Layouts in a sequential order, hold SHIFT + any arrow key simultaneously.

To select Bed Layouts in a random order, hold CTRL and select multiple Bed Layouts with the mouse.

b) Click **OPEN**. On completion of the Import operation, the TRILUTION information box is displayed.

If a Bed Layout with the same name is found, TRILUTION automatically adds a number to the end of the name.

c) On the TRILUTION information dialog box, do the following:

1) To view the log information of the import operation, click **DETAILS**.

2) Click **OK**.

Closing the Bed Layout Utility

Click × on the upper right corner of the Bed Layout Utility.

Open Access

E

Users log on to the TRILUTION LC Open Access and choose the application to run from a pick-list. They then use a simple "wizard" which directs them through the experiment. The intuitive nature of the "wizard" ensures Users will have a quick learning curve.

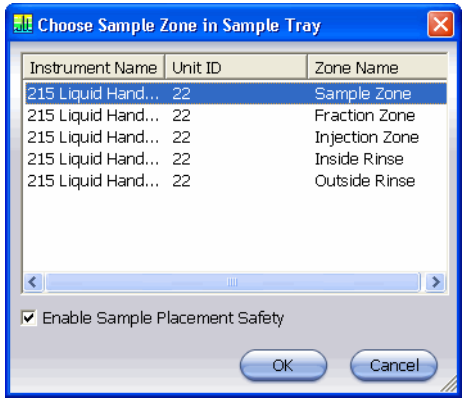
TRILUTION LC's multi-tiered approach allows users of all levels, from novice to expert, access to one of the leading chromatographic softwares in the industry. Several laboratories can benefit from a single Administrator's expertise.

TRILUTION LC Open Access

Open Access provides a graphical interface for setting up an Application Run. Complete the Open Access Wizard to select the samples to be processed, satisfy any variables, and optionally set the initial volume of wells.

Enable Open Access for Applications

Before a user can run an Application in Open Access, the Application must be enabled for Open Access and Project must be shared in the Project Library of TRILUTION LC. Users who can enable Open Access for Applications and share Projects are those who have the View, Create, and Modify permissions for the Project Library. Enabling Open Access for the Application is a right-click option. See **Application** on page 2-7. Sharing a Project is also a right-click option. See **Project** on page 2-6 and **Sharing a Project** on page 2-17.


Choose Sample Zone in Sample Tray
Instrument Name
Unit ID
Zone Name
215 Liquid Hand... 22 Sample Zone
215 Liquid Hand... 22 Fraction Zone
215 Liquid Hand... 22 Injection Zone
215 Liquid Hand... 22 Inside Rinse
215 Liquid Hand... 22 Outside Rinse
Enable Sample Placement Safety
OK
Cancel

After an Application has been enabled for Open Access, a dialog displays requesting specification of the Sample Zone. The dialog also includes a check box to Enable Sample Placement Safety which defaults selected. When sample placement safety is enabled, users will not be prompted to place samples if the instrument is running.

Note: All Methods in an Open Access Application must use the same Bed Layout (Template, Racks, Zones, and Wells) for instruments at the same unit ID.

Launch Open Access

WINDOWS® 2000

On the Microsoft® Windows® 2000 operating system, do one of the following:

- Click **START** and then select **PROGRAMS>GILSON APPLICATIONS>TRILUTION LC>TRILUTION LC OPEN ACCESS.**
- On the Desktop, double-click the TRILUTION LC Open Access icon ( ).

The Open Access Application window is displayed.

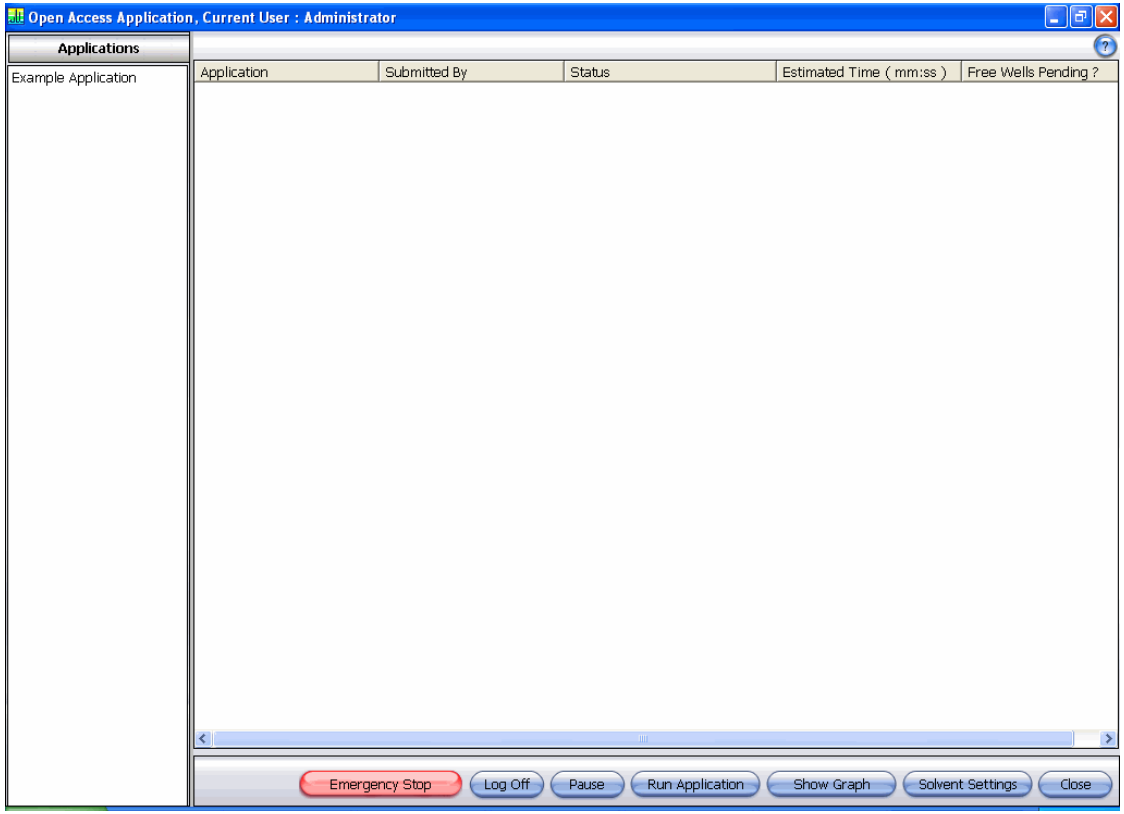
WINDOWS® XP

On a Windows® XP operating system do one of the following:

- Click **START** and then select **ALL PROGRAMS> GILSON APPLICATIONS>TRILUTION LC> TRILUTION LC OPEN ACCESS.**
- On the Desktop, double-click the TRILUTION LC Open Access icon ( ).

The Open Access Application window is displayed.

Open Access Application Window



The Open Access Application Window

Description

In the Open Access Application window, you can do the following:

- Select an Application to run.
- View the Applications running and in queue for all users on this computer.
- Right-click on a queued or running Application and then select Fraction Re-injection to set the criteria for fraction re-injection for that Application.
- Free wells for subsequent Application Runs.

The Open Access Application window has the following action buttons:

- **EMERGENCY STOP**: This button stops the run and stops the flow from the pumps.
- **LOG OFF**: This button ends the current user's session.
- **PAUSE**: This button causes the run time and gradient progression to enter a timed hold. Mobile phase continues to flow at the current composition and flow rate. If you pause a run, data collection and fraction collection are not interrupted. It proceeds until the data collection time for the current Method elapses.

  To continue the gradient progression, click **CONTINUE**. The run time and the gradient profile continue as programmed.
- **RUN APPLICATION**: This button displays the TRILUTION Log On dialog and then Applications available to run for the logged on user.

- **SHOW GRAPH**: This button displays the real-time chromatogram if clicked while the Application is running.
- **SOLVENT SETTINGS**: This button allows you to update, while running, the volume of solvents available.
- **CLOSE**: Exits and closes TRILUTION LC Open Access.

Begin the Open Access Wizard

To begin the Open Access Wizard do the following:

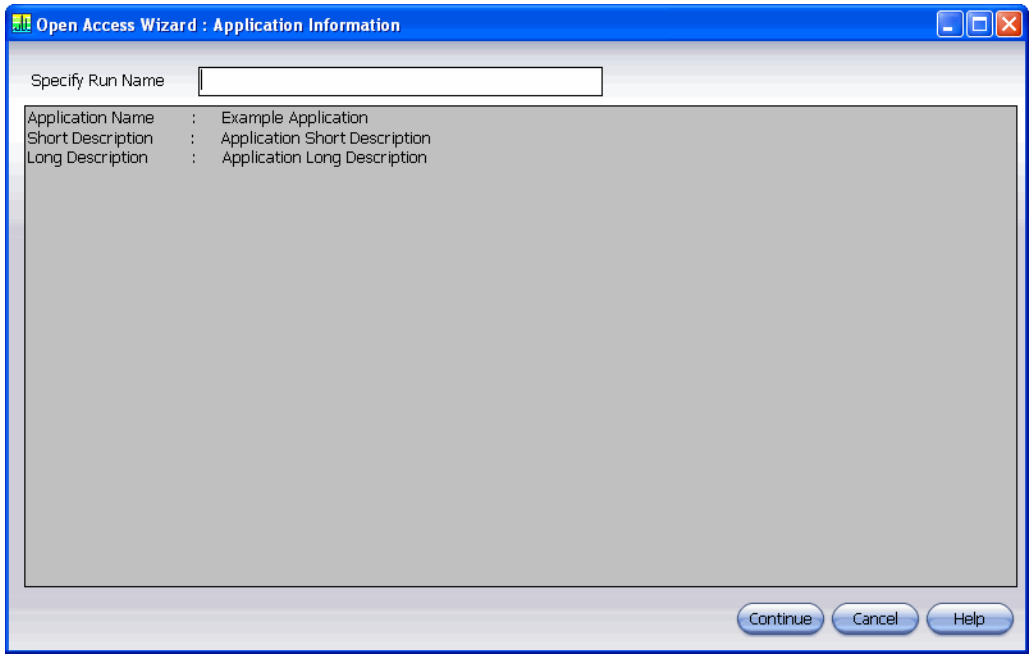
1 Click **RUN APPLICATION**. The TRILUTION LC log on window is displayed.

2 In the TRILUTION LC log on window, do the following:

- In the ***User Name*** field, type your user name.
- In the ***Password*** field, type your password.
- Click **LOG ON**. The Applications are listed in the Applications palette.

3 Double-click the name of the Application that will be run. The Open Access Wizard begins.

Application Information



The Open Access Wizard: Application Information screen

Description

In the Application Information window, you can do the following:

- Name the run.

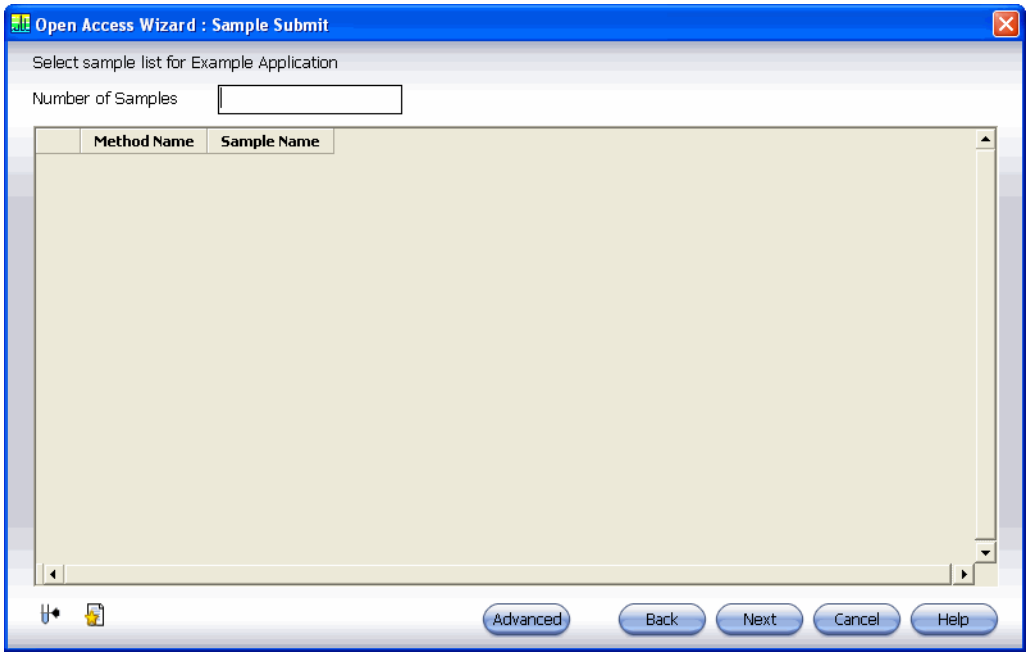
The Application Information screen displays the following information:

- **Application Name**: The name of the current Application.
- **Short Description**: The short description entered, if any, for the current Application.
- **Long Description**: The long description entered, if any, for the current Application.

The Application Information screen has the following action buttons:

- **CONTINUE**: This button advances to the Sample Submit screen.
- **CANCEL**: Exits the Open Access Wizard and returns to the Open Access Main Menu.
- **HELP**: Provides information about the screen.

Sample Submit



Open Access Wizard: Sample Submit screen

In the Open Access Wizard - Sample Submit screen, you can do the following:

- Set the number of samples to run.
- Provide information about each sample to run.
- Set initial volumes (optional).
- Set fraction re-injection criteria (optional).

Description

The Sample Submit screen has the following section:

Number of Samples: The field for indicating the number of samples that will be run. After typing the number, press **ENTER**.

The Sample Submit screen also contains an editable grid that specifies how many samples will be run, information about those samples, and qualifies any variables in the associated Methods.

Default Columns

Columns for Method Name, Sample Name, and Notes appear by default.

Columns can be shown or hidden. Right-click on a column name and then select the column name from the menu. Doing so toggles the column to hide. Repeat to toggle the column to show.

Columns can be re-sized by dragging the column border in the column header.

Descriptions of all columns follow.

Method Name: This column is required. Select a Method from the drop-down list of Methods in the Application. This is the Method that will be used when the selected sample is run and to analyze the collected data for that sample.

Sample Name: This column is optional. Click in the cell and type a name that describes the Sample (default is "Sample"). This name appears in the run-time chromatogram and the Samples drop-down list in the Run Result window, and optionally, in reports.

Amount: Not used.

Sample Description: This column is optional. Click in the cell and type a name that describes the Sample (default is "Sample").

Sample Type: This column is required. There are four choices in the drop-down list that are described below. The default is UNKNOWN.

BLANK: A blank sample is generally the mobile phase solvent. A run with a blank solvent enables TRILUTION LC to subtract the solvent noise from an actual run.

CONTROL: A control sample is a reference sample containing the target analyte of a known amount.

When the sample is identified as a control, the Standard Information dialog displays. Enter a value for the Actual Amount and optionally, for the Nominal Amount.

Actual Amount: Actual Amount is the amount you actually measured to prepare a particular unknown sample.

Nominal Amount: Nominal Amount is the amount you wanted to measure.

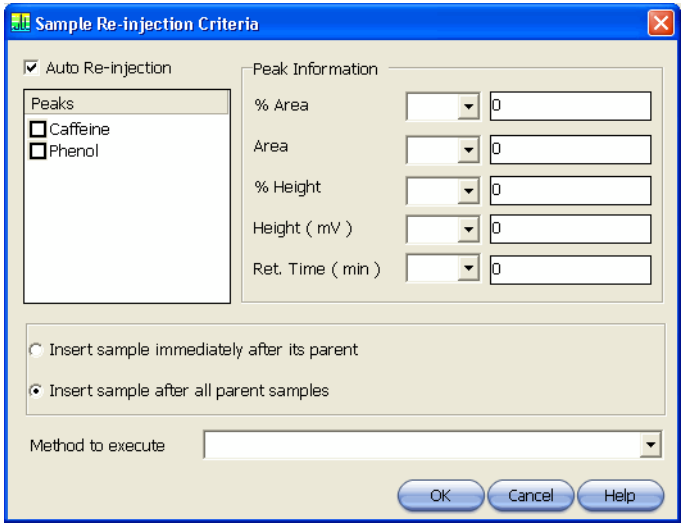
UNKNOWN: The unknown sample is the interest of analysis. The amounts with area/height are reported according to the standard sample used for calibration.

STANDARD: The standard sample is a sample with known amounts. A standard sample run multiple times provides calibration points. The amounts in unknown sample are reported in TRILUTION LC in proportion to the calibration points.

When the sample is identified as a standard, the Standard Information dialog displays. Enter values for the Actual Amount and Nominal Amount.

Actual Amount: Actual Amount is the amount you actually measured to prepare a particular unknown sample.

Nominal Amount: Nominal Amount is the amount you wanted to measure.



Sample Re-injection: This column is optional and is used if you want to re-inject a sample based on either a named peak or an unknown peak meeting specified peak criteria.

Note: If you set both fraction and peak re-injection criteria and both are met, only fractions will be re-injected.

To set peak criteria for re-injecting a sample:

1 Click in the cell to open the Sample Re-injection Criteria dialog.

2 Ensure that the Auto Re-injection check box is selected. (It is by default.)

3 Select the check box next to the name of each peak to be considered. If no peaks are selected, all peaks will be considered.

4 Specify the criteria for the peaks. Criterion are considered independently. If any of the peaks meet any of the criteria, the sample will be re-injected.

   a) Select an operator (null, greater than, or less than). If null is selected, the criteria will be ignored.

   b) Type a value.

5 Choose, by selecting the corresponding option button, whether to:

   - insert the sample immediately after its parent or
   - after all parent samples (at end)

   If you will be using a shutdown method, you can specify a step in the Sample List for the shutdown and then the sample will be inserted after all parent samples and before the shutdown. See **Specifying a Shutdown** on page 8-22.

6 Select the Method to execute when re-injecting the sample.

   Repeat for each sample in the Sample List as desired.

Notes: This optional column appears after a Method is selected. Double-click in the cell and then type any text that you want to appear as Sample Notes in the Analysis Report (if Graph is displayed).

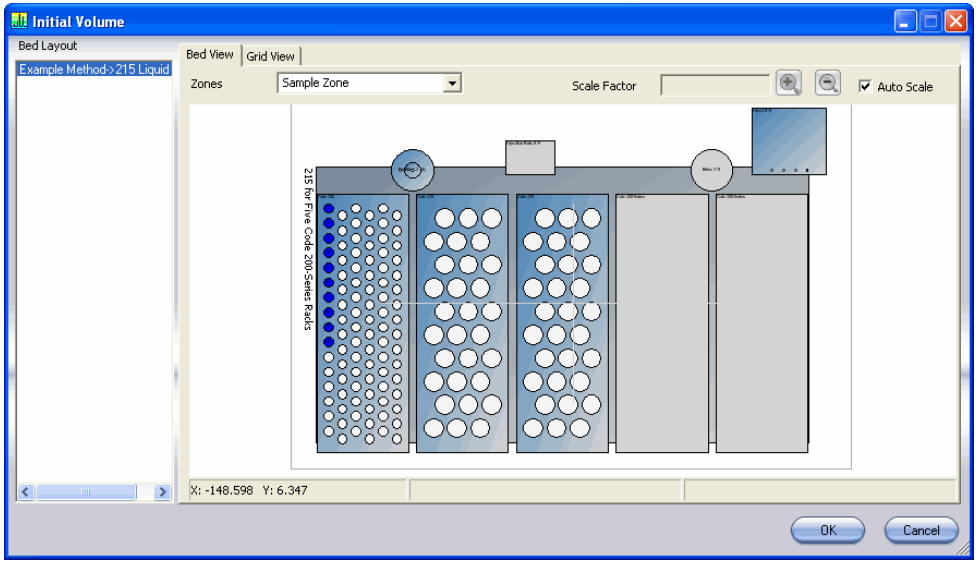
Additional Columns: Other columns appear depending on the variables set in the Method. For example, if an injection task requests inputs, such as sample volume and sample location, columns labeled #Sample Volume and #Sample Location appear. If one of the inputs requests the fraction site at which to begin collection, refer to **Setting Up Sample List for Fraction Collection** on page 8-23.

The Sample Submit screen has the following action buttons:

- **ADVANCED**: This button allows you to specify that a sample well can be used more than once by displaying the sample well column and enabling it to be edited.
- **BACK** : This button returns to the Application Information screen.
- **NEXT** : This button advances to the Sample Placement screen.
- **CANCEL**: Exits the Open Access Wizard and returns to the Open Access Main Menu.
- **HELP**: Provides information about the screen.
- : Allows you to set initial volumes for any or all wells in each Bed Layout in the Application. For more information, refer to **Initial Volume** on page E-15.
- : Allows you to set the criteria for fraction re-injection and to select the Method to run when re-injecting fractions. For more information, refer to **Re-injecting Collected Fractions** on page 8-25.

Initial Volume

The Initial Volume screen allows you to set the volume of the wells on the bed at the time the Application starts, thereby allowing you to use Liquid Level Following and to track solutions as they are moved around the bed.



The Initial Volume Screen

Description

The Initial Volume screen has the following sections:

- **Bed View**: Allows you to view the Bed Layout details and/or lasso the wells for which initial volumes will be set.
  - To zoom the bed layout, toggle the Auto Scale selection off.
  - To zoom in on the bed layout, click once or repeatedly (maximum scale factor 2000, increments by 5). TRILUTION LC will zoom in to the center of the cross hairs. Move the cross hairs by scrolling the window.
  - To zoom out on the bed layout, click once or repeatedly.
  - To zoom to a specific scale factor, enter the number in the Scale Factor field.
- **Grid View**: Allows you to type initial volumes into a grid.
- **Zones/Zone Name**: Lists all of the zones defined in the Bed Layout.
- **Well (Grid View Only):** Cell in the grid in which to specify the well number for which an initial volume will be set.
- **Initial Volume (µL) (Grid View Only)**: Cell in the grid in which to specify an initial volume for the selected well.

The Initial Volume screen has the following action buttons:

- **OK**: Allows you to write the initial volumes to the database.
- **CANCEL**: Exits the Initial Volume screen and returns to the Sample Submit screen.

To specify initial volumes

On the Initial Volume screen, do the following:

1 Select a bed layout.

2 Select a zone.

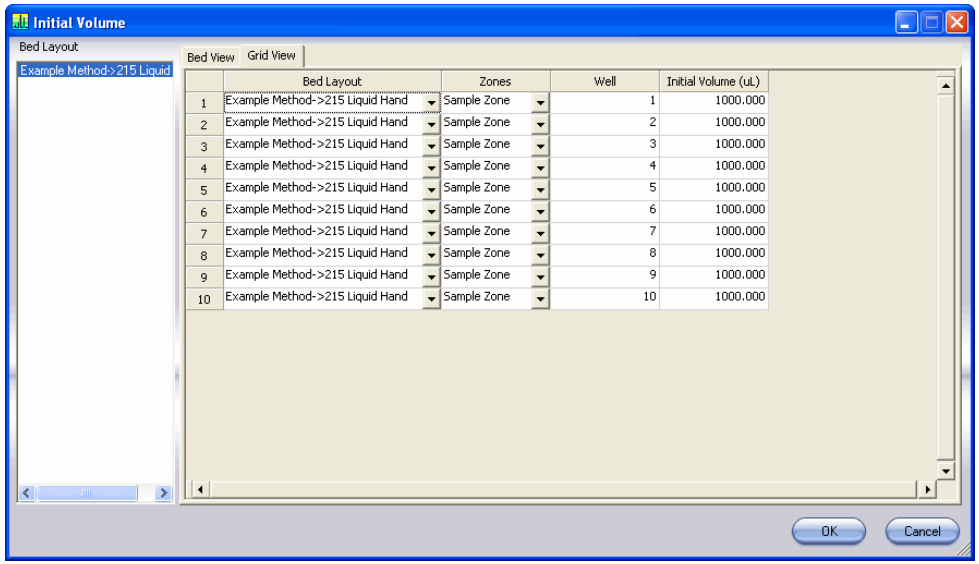
3 Lasso the well(s) or **CTRL**-click individual well(s). Or, in Grid View, type the well number.

4 Right-click and select **SET INITIAL VOLUME** (Bed View only).

5 Type the initial volume for the selected well(s) and then click **OK**.

There is no volume checking for the well being used.

6 Select the Grid View tab and verify the entries.


Initial Volume
Bed Layout
Example Method->215 Liquid
Bed View
Grid View
Bed Layout
Zones
Well
Initial Volume (uL)
1 Example Method->215 Liquid Hand Sample Zone 1 1000.000
2 Example Method->215 Liquid Hand Sample Zone 2 1000.000
3 Example Method->215 Liquid Hand Sample Zone 3 1000.000
4 Example Method->215 Liquid Hand Sample Zone 4 1000.000
5 Example Method->215 Liquid Hand Sample Zone 5 1000.000
6 Example Method->215 Liquid Hand Sample Zone 6 1000.000
7 Example Method->215 Liquid Hand Sample Zone 7 1000.000
8 Example Method->215 Liquid Hand Sample Zone 8 1000.000
9 Example Method->215 Liquid Hand Sample Zone 9 1000.000
10 Example Method->215 Liquid Hand Sample Zone 10 1000.000
OK
Cancel

Initial Volumes Grid View

7 Click **OK**.

Removing Initial Volumes

To remove initial volumes, do the following:

1 Select the zone.

2 Lasso the well(s) or **CTRL**-click individual well(s). Or, in Grid View, select the row for the well for which the initial volume will be removed.

3 Right-click on a selected well to view the submenu and then click **REMOVE INITIAL VOLUME**. Or, in Grid View, right-click the row and then select **DELETE ROW.**

4 Select the Grid View tab and verify the entries.

Inserting sample between samples

To insert a sample between two existing samples:

1 Select the row for the sample after which the new sample will be placed. For example, to place a step between steps 3 and 4, select row 3.

2 Right-click and then select **INSERT SAMPLE**.

Adding sample

To add the first sample to a new list or add a sample to the bottom of the list:

1 Select any row.

2 Right-click and then select **ADD SAMPLE** or **ADD MULTIPLE SAMPLES**. If **ADD MULTIPLE SAMPLES** is selected, specify the number of samples to add.

3 Repeat to add more samples.

Generating multiple samples

To add multiple samples:

1 Select any row.

2 Right-click and then select **ADD MULTIPLE SAMPLES**.

3 Specify the number of samples to add.
4 Repeat to add more steps.

Deleting sample

To remove a row (sample) from the Sample List:

1 Select the row for the sample to be deleted.
2 Right-click and then select **DELETE SAMPLE**.

Clearing sample

To clear a row of all values, but keep the row in the Sample List:

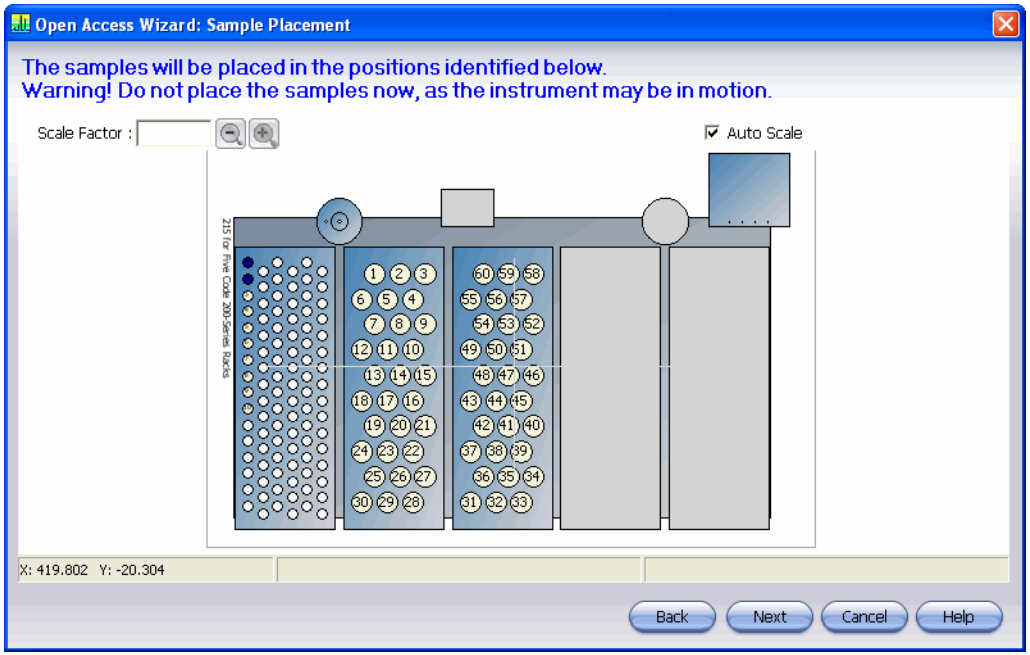
1 Select the row for the sample to be cleared.
2 Right-click and then select **CLEAR SAMPLE**.

Specifying a shutdown

To specify a shutdown:

1 Select a Method under Method Name.
2 Select the row.
3 Right-click and then select **SELECT AS SHUTDOWN**.

Sample Placement


Open Access Wizard: Sample Placement
The samples will be placed in the positions identified below.
Warning! Do not place the samples now, as the instrument may be in motion.
Scale Factor :
Auto Scale
X: 419.802 Y: -20.304
Back
Next
Cancel
Help

The Sample Placement Screen

Description

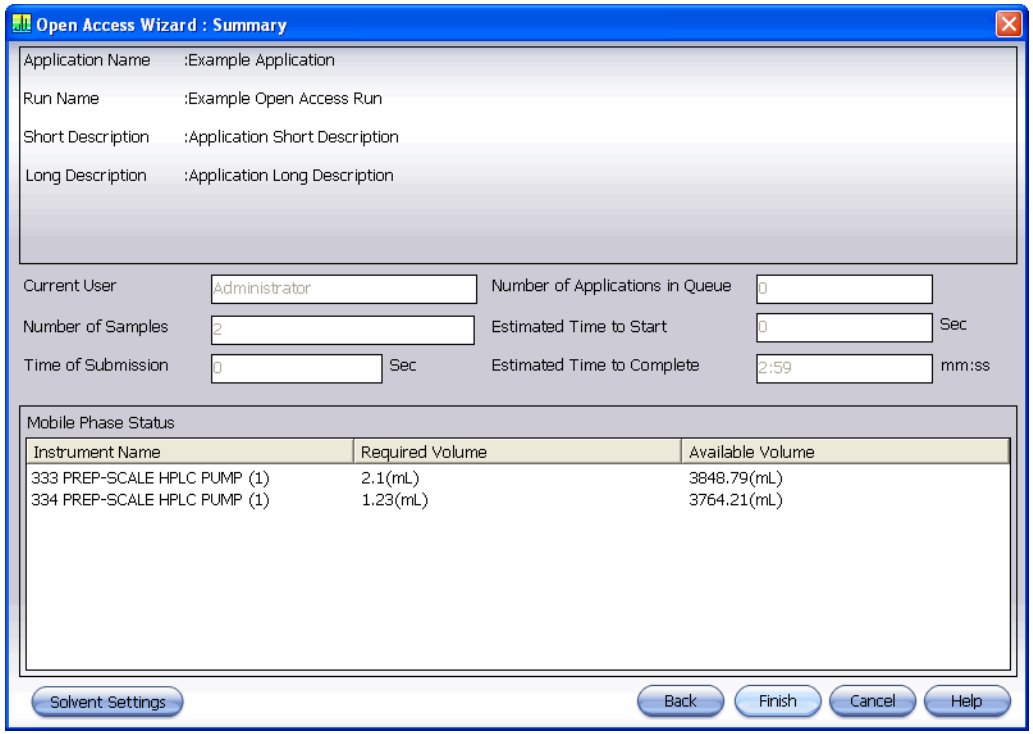
The Sample Placement screen confirms that you have added samples and shows where they will be placed.

Warning! Do not place the samples now, as the instrument may be in motion.

The Sample Placement screen has the following action buttons:

- **BACK** : This button returns to the Sample Submit screen.
- **NEXT** : This button advances to the Summary screen.
- **CANCEL**: Exits the Open Access Wizard and returns to the Open Access Main Menu.
- **HELP**: Provides information about the screen.

Summary



Open Access Wizard: Summary screen

Description

The Summary screen has the following sections:

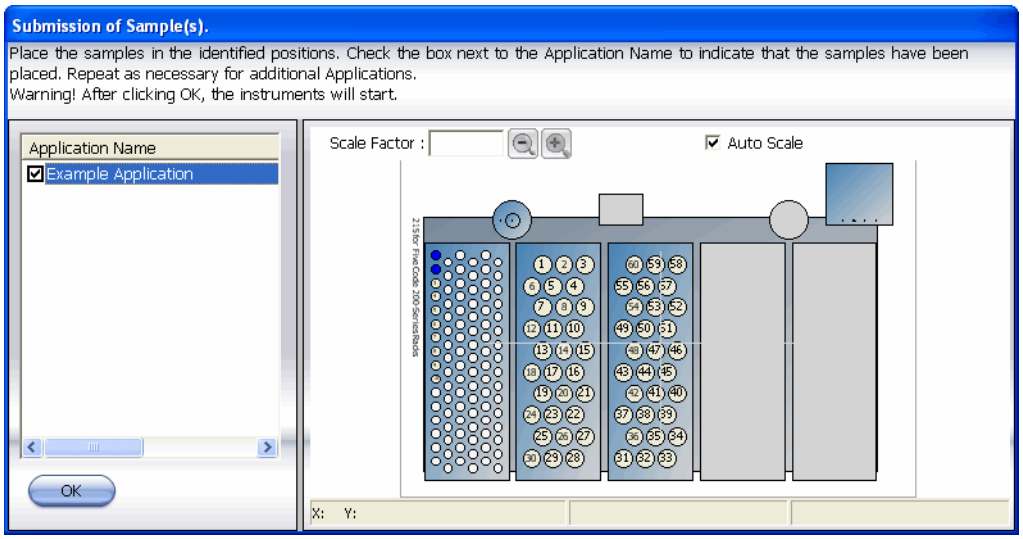
- **Current User:** The current user logged on to TRILUTION LC Open Access.
- **Number of Samples**: The number of samples that will be run.
- **Time of Submission**: The length of time that must elapse before samples can be placed for the Application Run being set up.
- **Mobile Phase Status:** Lists the volume of mobile phase required based on the number of samples and the flow rate and mobile phase composition set in the Method. Also lists the available volume, which is set by clicking **SOLVENT SETTINGS**. This volume is always displayed in milliliters (mL).
- **Number of Applications in Queue:** The number of Applications that must finish running before the current Application will begin running.
- **Estimated Time to Start:** The approximate length of time that will elapse before the current Application will begin running.
- **Estimated Time to Complete:** This is a length of time equal to the Estimated Time to Start + (Run Time * Number of Samples).

The Summary screen has the following action buttons:

- **SOLVENT SETTINGS**: Allows you to indicate the volume of reservoir solvent; uses your unit settings for volume for the unit of measure.
- **BACK**: Returns to the Sample Placement screen.
- **FINISH**: Exits the Open Access Wizard and displays the Submission of Samples screen, if the instrument is ready to accept the samples.

- **CANCEL**: Exits the Open Access Wizard and returns to the Open Access Main Menu.
- **HELP**: Provides information about the screen.

Submission of Sample(s)


Submission of Sample(s).
Place the samples in the identified positions. Check the box next to the Application Name to indicate that the samples have been placed. Repeat as necessary for additional Applications.
Warning! After clicking OK, the instruments will start.
Application Name
Example Application
OK
Scale Factor :
Auto Scale
X:
Y:

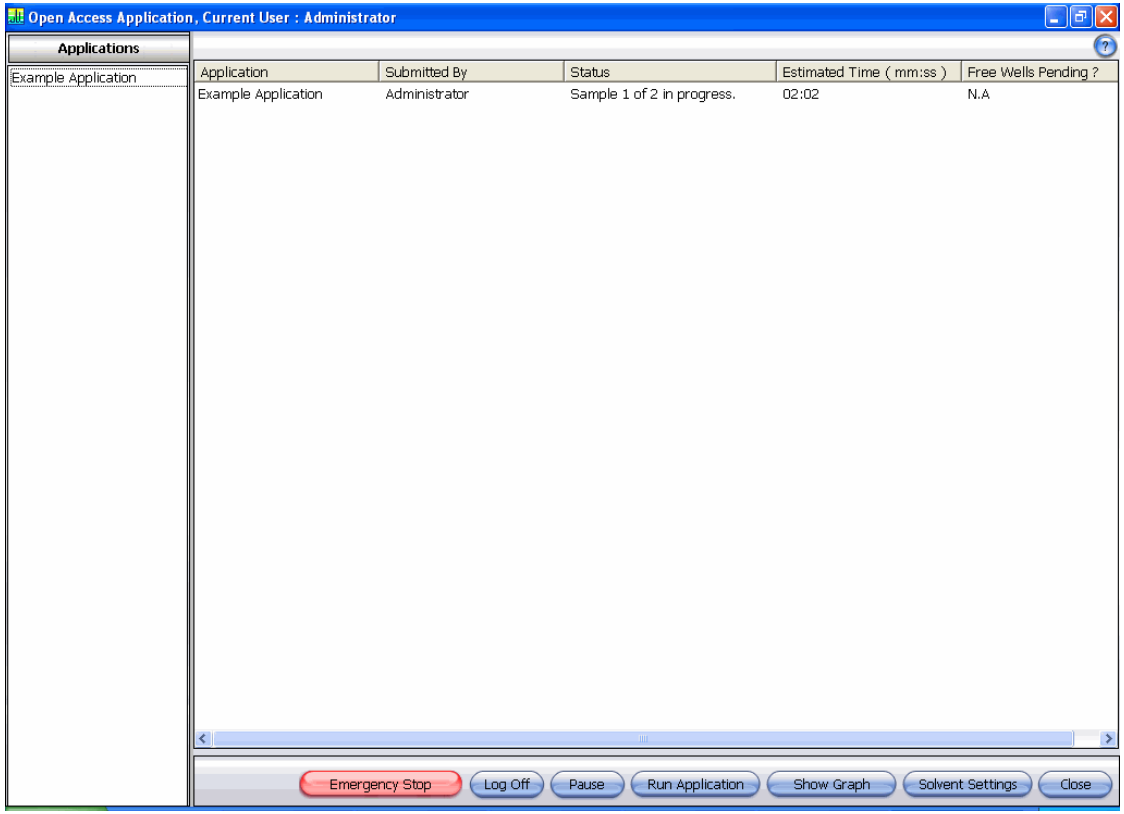
Submission of Sample(s) Screen

Description

The Submission of Sample(s) screen shows where samples should be placed.

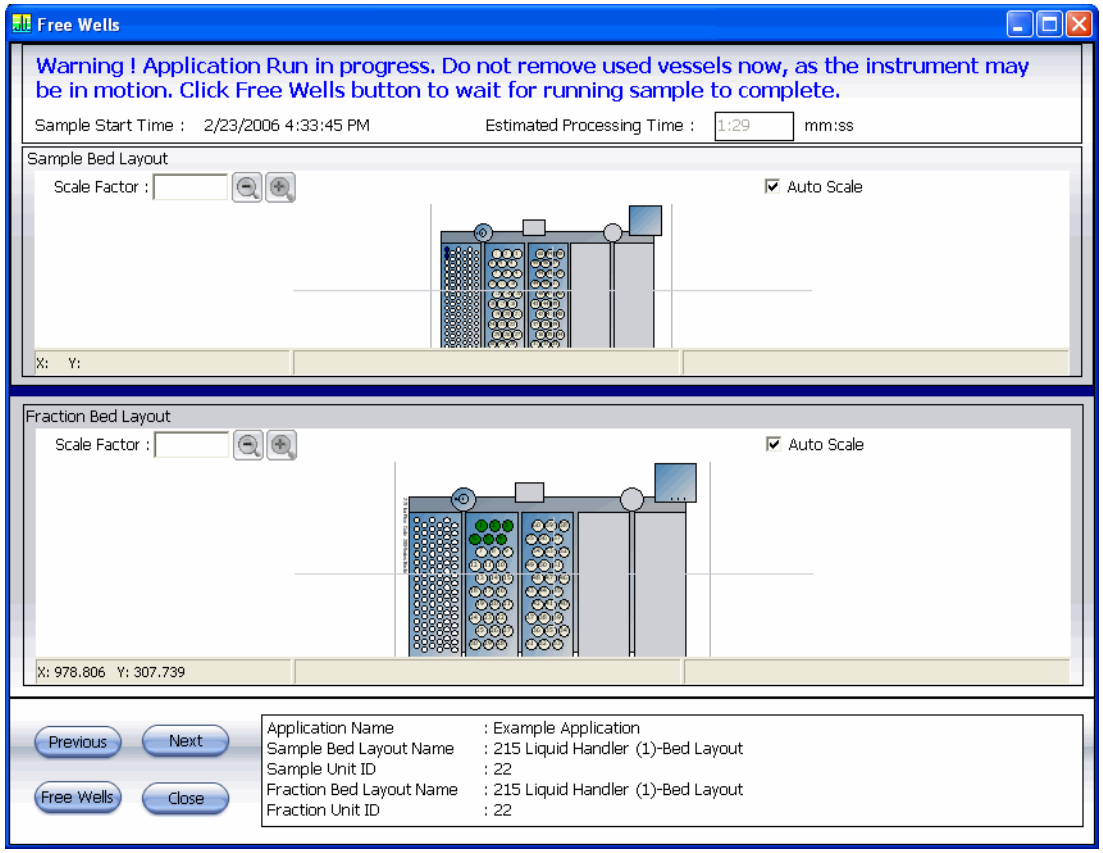
The Submission of Sample(s) screen has the following action button:

- **OK** : This button starts the Application running and advances to the queue listing in the Open Access Application window.



Queue Listing in the Open Access Application Window

Free Wells


Free Wells
Warning ! Application Run in progress. Do not remove used vessels now, as the instrument may be in motion. Click Free Wells button to wait for running sample to complete.
Sample Start Time : 2/23/2006 4:33:45 PM
Estimated Processing Time : 1:29 mm:ss
Sample Bed Layout
Scale Factor :
Auto Scale
X: Y:
Fraction Bed Layout
Scale Factor :
Auto Scale
X: 978.806 Y: 307.739
Previous
Next
Free Wells
Close
Application Name : Example Application
Sample Bed Layout Name : 215 Liquid Handler (1)-Bed Layout
Sample Unit ID : 22
Fraction Bed Layout Name : 215 Liquid Handler (1)-Bed Layout
Fraction Unit ID : 22

The Free Wells Dialog (Application Running)

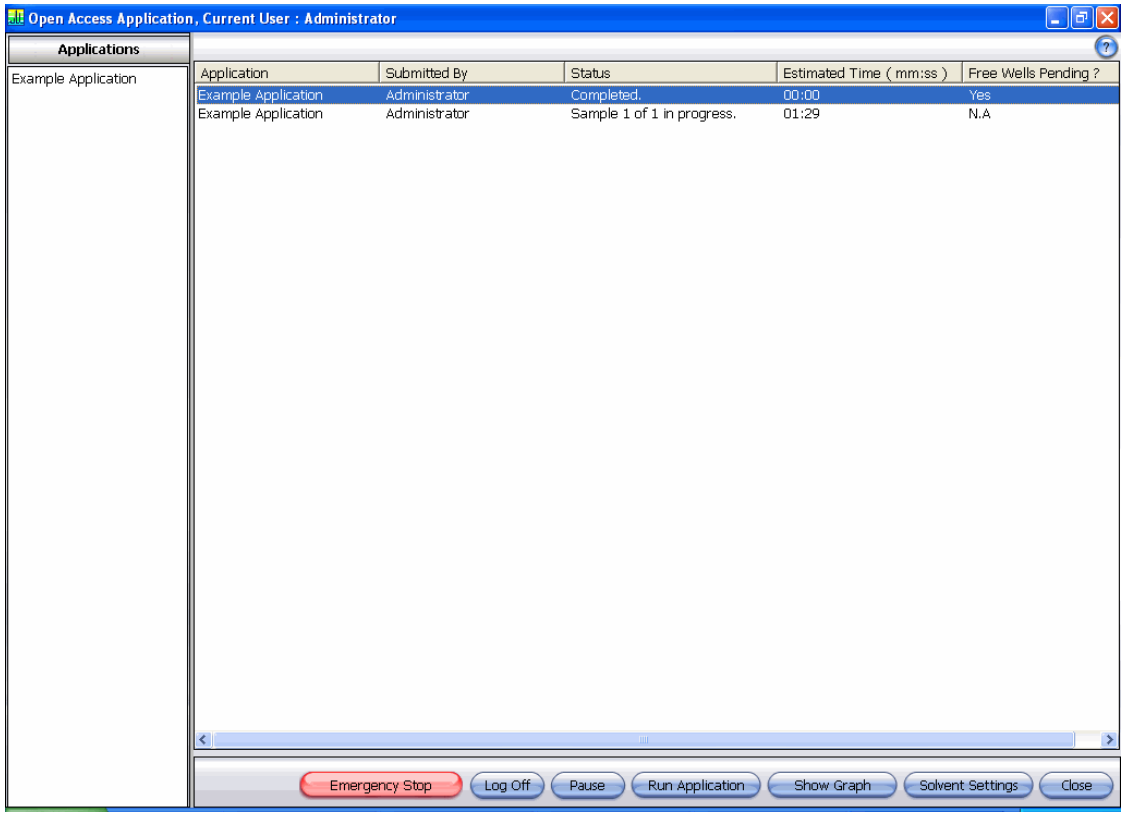
Description

The Free Wells dialog is accessed by double-clicking a completed Application in the Open Access Application Window. It shows you where your samples were and where your fractions are. Use this screen to free those wells for use by other Applications. You will not be able to free wells that are used in a running Application.

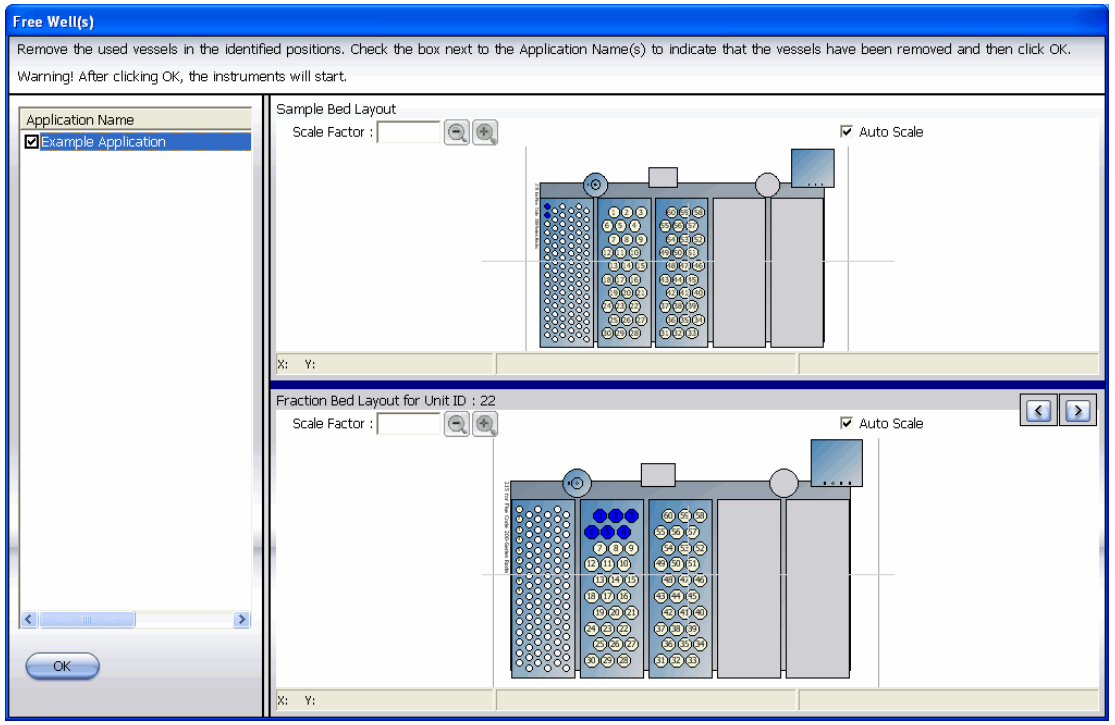
The Free Wells dialog has the following action buttons:

- **NEXT**: Displays the next Bed Layout.
- **PREVIOUS**: Displays the previous Bed Layout.
- **FREE WELLS**: Clicking this button lets TRILUTION LC know that the wells previously used by the selected Application are now available for use by other Applications and it closes the dialog.
- **CLOSE**: Exits the Free Wells dialog.

The queue will indicate if there are free wells pending.



When the Application Run finishes, you will be prompted to remove the vessels.


Free Well(s)
Remove the used vessels in the identified positions. Check the box next to the Application Name(s) to indicate that the vessels have been removed and then click OK.
Warning! After clicking OK, the instruments will start.
Application Name
Example Application
OK
Sample Bed Layout
Scale Factor :
Auto Scale
X: Y:
Fraction Bed Layout for Unit ID : 22
Scale Factor :
Auto Scale
X: Y:

Electronic Record Management (ERM) Features F

The implementation of an electronic record management system can be complex. TRILUTION LC can assist chromatographers in attaining 21 CFR Part 11 compliance through the implementation of Electronic Record Management (ERM). The ERM features allow electronic records security and tracking (audit trails) and electronic signatures, as well as permitting customized user access levels within the software. This section describes how to set up and use these features.

For information about activating the ERM features, see **ERM** on page 1-22.

ERM Administration

ERM Features are accessed from the **LIQUID CHROMATOGRAPHY AND FRACTION COLLECTION|UTILITIES|ERM|ERM FEATURES** menu by a user assigned to the default Admin group. In this dialog, choose whether or not to enable electronic record management (ERM) features. Check boxes default cleared, thus ERM defaults disabled. When Enable ERM Features is selected, the Audit log is enabled. When Enable Signature Points is selected, a signature will be required by every user for every save. These signatures will be tracked in the E-Signature log.

For information on how to set up users and groups, See **Users and Groups** in ***Chapter1***.

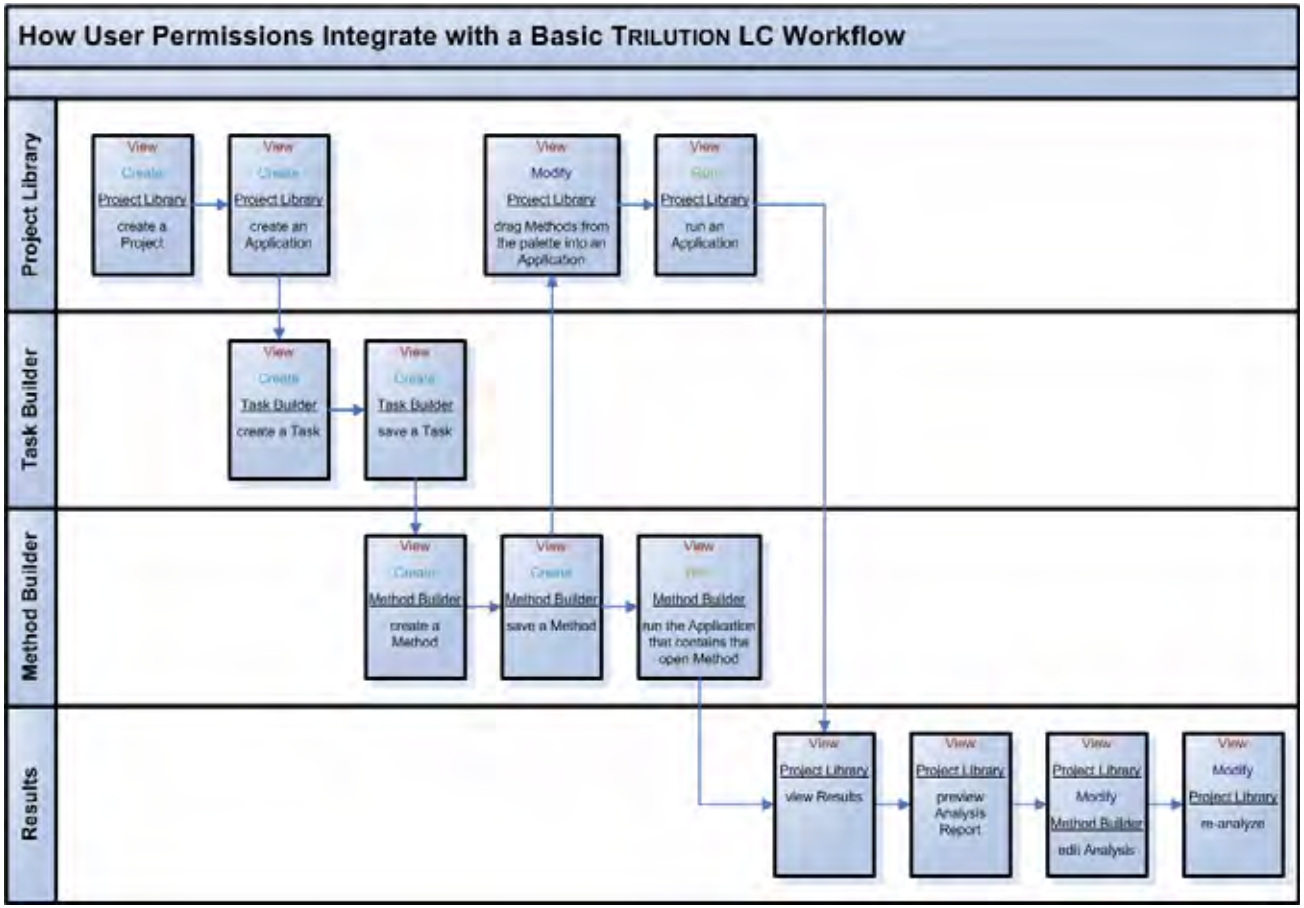
User and Groups

During the TRILUTION LC installation, by default, two groups are created: Admin and Analyst. “Administrator” is the default user in the Admin group. The Admin group is assigned all the rights. “Analyst” is the default user in the Analyst group. The Analyst group can view, create and modify in TRILUTION LC.

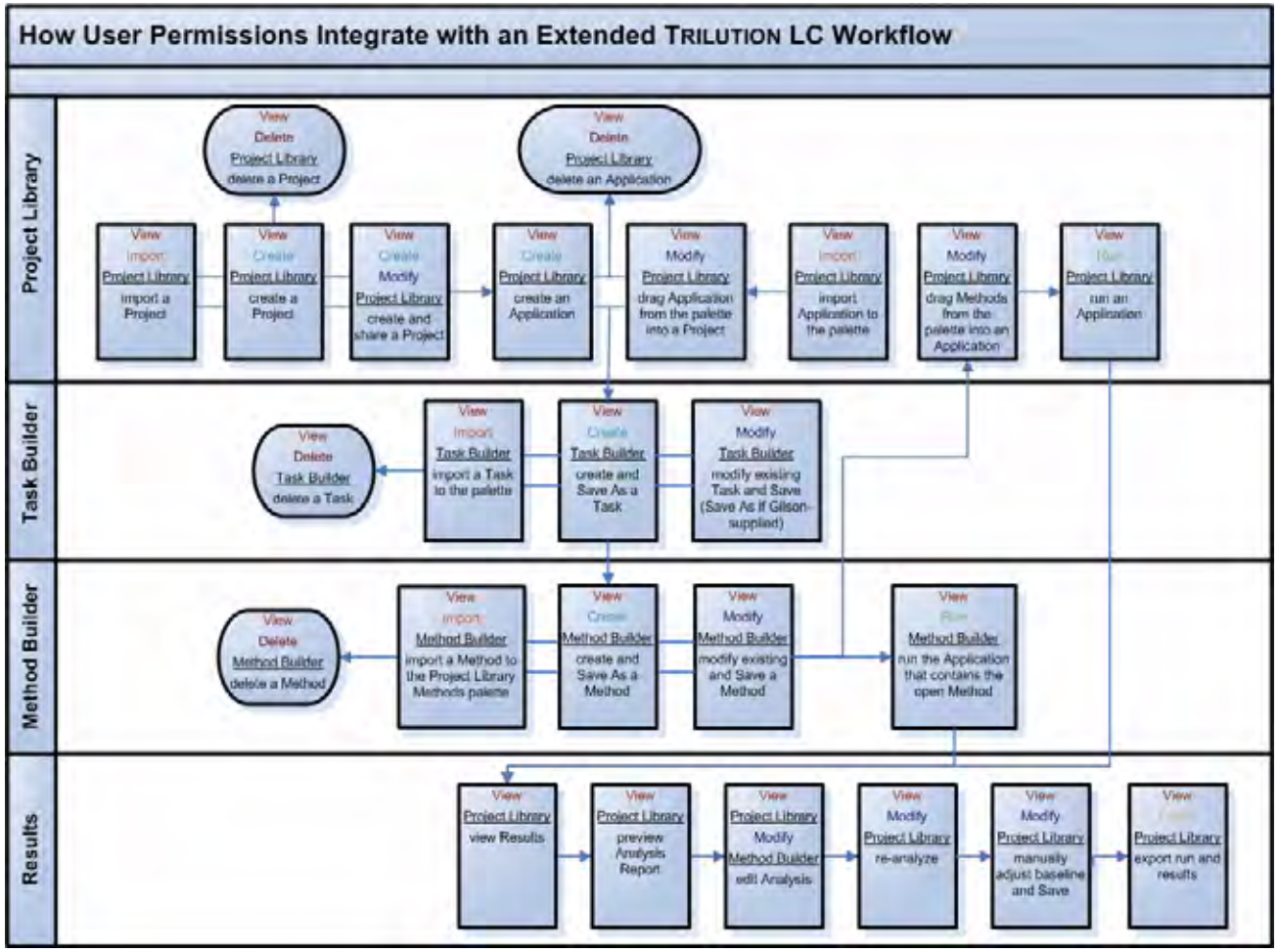
Group	*Default Permissions*
Admin	• Create • Modify • Delete • View • Import • Export • Run
Analyst	• Create • Modify • View • Run

Default Permissions for Default Groups

The graphic below depicts which permissions are required for a basic workflow. The permissions are listed first, followed by the builder (or Project Library) in which those permissions must be granted, followed by the action.


How User Permissions Integrate with a Basic TRILUTION LC Workflow
Project Library
Task Builder
Method Builder
Results
View Create Project Library create a Project
View Create Project Library create an Application
View Modify Project Library drag Methods from the palette into an Application
View Run Project Library run an Application
View Create Task Builder create a Task
View Create Task Builder save a Task
View Create Method Builder create a Method
View Create Method Builder save a Method
View Run Method Builder run the Application that contains the open Method
View Project Library view Results
View Project Library preview Analysis Report
View Project Library Modify Method Builder edit Analysis
View Modify Project Library re-analyze

The graphic below depicts the use of permissions for a more detailed workflow.


How User Permissions Integrate with an Extended TRILUTION LC Workflow
Project Library
Task Builder
Method Builder
Results
View Delete Project Library delete a Project
View Delete Project Library delete an Application
View Import Project Library import a Project
View Create Project Library create a Project
View Create Modify Project Library create and share a Project
View Create Project Library create an Application
View Modify Project Library drag Application from the palette into a Project
View Import Project Library import Application to the palette
View Modify Project Library drag Methods from the palette into an Application
View Run Project Library run an Application
View Delete Task Builder delete a Task
View Import Task Builder import a Task to the palette
View Create Task Builder create and Save As a Task
View Modify Task Builder modify existing Task and Save (Save As if Gilson-supplied)
View Delete Method Builder delete a Method
View Import Method Builder import a Method to the Project Library Methods palette
View Create Method Builder create and Save As a Method
View Modify Method Builder modify existing and Save a Method
View Run Method Builder run the Application that contains the open Method
View Project Library view Results
View Project Library preview Analysis Report
View Project Library Modify Method Builder edit Analysis
View Modify Project Library re-analyze
View Modify Project Library manually adjust baseline and Save
View Export Project Library export run and results

Share

To enable other users to view or modify a Project, it must be shared. Once shared, the logged on user can act on the Project per the permissions assigned to that user's group. For example, a user with the Modify Project Library permission can make changes to a Project that has been shared with him.

To share a Project, the user must have the View and Modify permissions for the Project Library. He can then share any Projects he has access to (he created them or they have been shared with him).

Note: Shared projects can only be deleted by the user who created the project regardless of whether another user has Delete permissions in the Project Library.

GSIOC Configuration Editor

G

The GSIOC Configuration Editor enables you to modify COM (serial communications) port and baud rate information. Or, you can use this editor if incorrect information appears in the GSIOC Utility window.

1 Locate the GSIOC Configuration Editor (GSCONFIG.EXE) using Windows Explorer or the shortcut at Start—Programs—Gilson Applications—Utilities—GSIOC Configuration Editor. During installation, this editor was stored to C:\GILSON\UTIL unless the installation path was changed.

2 Start the editor. The GSIOC Configuration Editor window appears.

3 In the Port box, indicate the computer's serial communications port (COM) port to which the Gilson interface instrument (such as the liquid handler or 506C System Interface) is connected.

4 Click 19200 or 9600 to select the baud. The baud is the rate of data transmission between the computer and the Gilson instrument.

5 Click OK to save the changes. A message box appears indicating that the computer must be restarted before any changes become effective.

GSIOC Utility

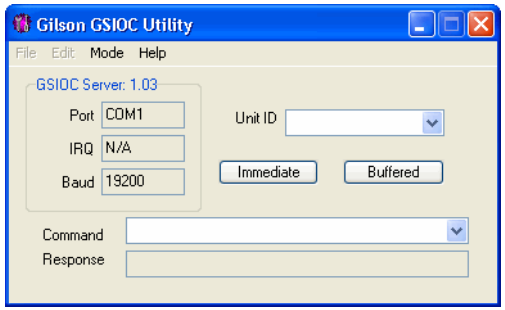
H

The GSIOC Utility allows you to issue commands to Gilson GSIOC instruments. Your Gilson-authorized representative may ask you to use this utility to verify that an instrument is connected correctly to the computer. For communication to occur, the Gilson instrument must be connected via an RS-232 connection to the computer or connected via a GSIOC connection to a Gilson interface instrument that is connected to the computer.

Starting the GSIOC Utility

1 Locate the GSIOC Utility (GSUTIL32.EXE) using Windows Explorer or the shortcut at
START>(ALL) PROGRAMS>GILSON APPLICATIONS>UTILITIES>GSIOC UTILITY.
During installation, this utility was stored to C:\GILSON\UTIL unless the installation path was changed.

2 Start the utility. The GSIOC Utility window appears.



Reviewing the Port and Baud Information

In the GSIOC Utility window, review the COM port and baud information. If any information is incorrect or missing, close the GSIOC Utility and use the GSIOC Configuration Editor to update the information. Refer to ***Appendix G, GSIOC Configuration Editor***.

Listing GSIOC Instruments

Using the GSIOC Utility, you can determine the instruments currently connected to the computer.

In the Mode menu, select Scan!

The Unit ID list box displays the unit IDs and the version of the connected instruments. If any connected instruments are missing from the list, ensure that the proper RS-232 or GSIOC connection exists between the computer and the instruments, and that the instruments do not have duplicate unit ID numbers.

Basic Mode

In the Basic mode, immediate and buffered GSIOC commands can be sent to specific Gilson instruments.

Review the Port, IRQ, and Baud information in this window. If any information is incorrect or missing, close the GSIOC Utility and use the GSIOC Configuration Editor to update the information.

There are two drop-down menus in the Basic mode of the Gilson GSIOC Utility: Mode Menu and Help Menu.

Basic Mode Buttons and Features

Immediate button

Sends an immediate command to the Unit ID selected.

Immediate commands request status information from an instrument. These commands are executed immediately, temporarily interrupting any command in progress. Each command is a string of no more than 40 characters.

You can find a list of valid immediate commands for each instrument in its user's guide.

Buffered button

Sends a buffered command to the Unit ID selected.

Buffered commands send instructions to an instrument. These commands are executed one at a time. Each command is a string of no more than 40 characters.

You can find a list of valid buffered commands for each instrument in its user's guide.

Command field

Where the command to be sent is specified. For more information on sending commands, see **Send an Immediate Command** on page H-24 or **Send a Buffered Command** on page H-25.

Response field

Returns a response to an immediate or buffered command.

The response to a successfully completed buffered command is “ok”.

Refer to the user’s guide for the Gilson instrument for a description of the valid response to immediate commands.

The response to an unsuccessfully completed immediate or buffered command is “#error”.

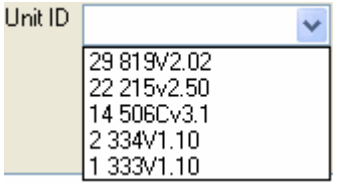
Basic Mode Menus

Mode Menu

There are three options in the Mode menu: Scan!, Advanced, and Ghost.

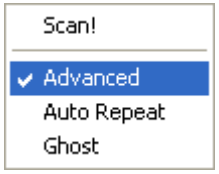
Scan!

The Scan! option on the Mode menu allows you to scan for GSIOC instruments. After a scan, the Unit ID list box displays the unit IDs and the version of the connected instruments. If any connected instruments are missing from the list, ensure that the proper RS-232 or GSIOC connection exists between the computer and the instruments, and that the instruments do not have duplicate Unit ID numbers.



Advanced

The advanced option in the Mode menu allows you to switch between the Basic and Advanced modes. A check mark means that the GSIOC Utility is in Advanced mode.



Ghost

The Ghost option in the Mode menu makes the GSIOC Utility window transparent (and always on top). This allows you to view another window behind the Utility. The Utility will remain fully functional in the Ghost mode.

Help Menu

Help Topics

When selected, the Help window for the Gilson GSIOC Utility appears.

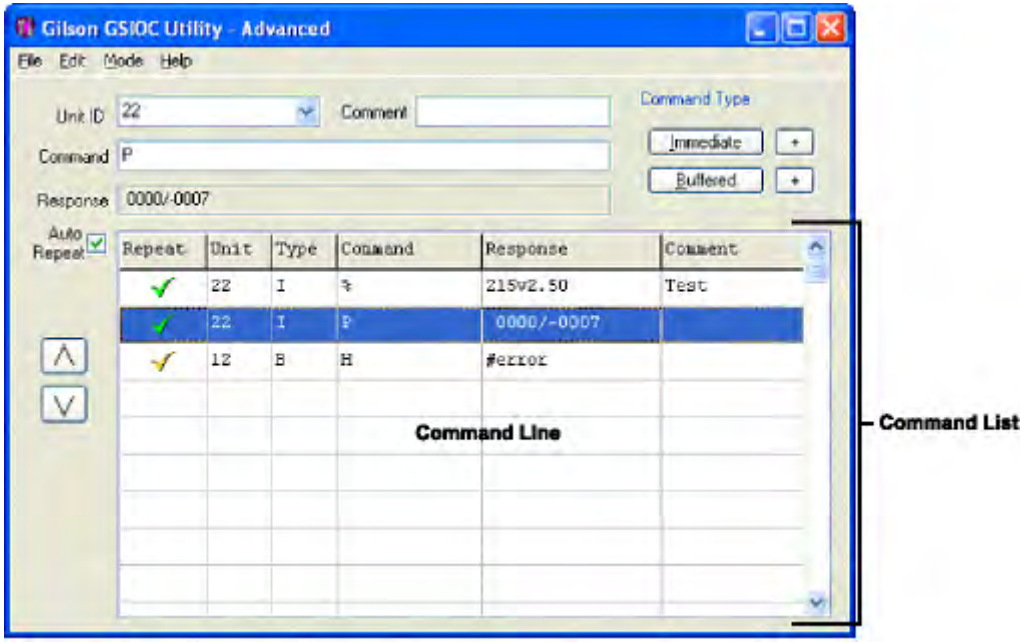
About

When selected, the About window appears.

This window displays the version of the Gilson GSIOC Utility, the GSIOC32.DLL, and the GSIOC Server or Driver; and the Port, IRQ, and Baud set by the GSIOC Configuration Editor.

Advanced Mode

In the Advanced mode, immediate and buffered GSIOC commands can be sent to specific Gilson instruments. In this mode, immediate and buffered commands with comments can be saved to a command list to be used as needed. The command lines can be repeated automatically to monitor the status of the instrument.



Review the Port, IRQ, and Baud information by selecting About... from the Help menu. If any information is incorrect or missing, close the GSIOC Utility and use the GSIOC Configuration Editor to update the information.

There are four drop-down menus in the Advanced mode of the Gilson GSIOC Utility: File Menu, Edit Menu, Mode Menu, and Help Menu.

Advanced Mode Buttons and Features

+ button

The + next to Immediate is used to insert an immediate command in the command list. For more information, see **Insert an Immediate Command** on page H-22.

The + next to Buffered is used to insert a buffered command in the command list. For more information, see **Insert a Buffered Command** on page H-23.

Arrow Up or Arrow Down button

These buttons (∧ or ∨) are used to change the position of a command in the command list.

To move a command

Highlight the command in the command list and use ∧ to move the command up in the list or ∨ to move the command down in the list.

Immediate button

Sends an immediate command to the Unit ID selected. The Comment field is not used.

Selecting the Immediate button will not add the command to the command list.

For more information, see **Send an Immediate Command** on page H-24.

Buffered button

Sends a buffered command to the Unit ID selected. The Comment field is not used.

Selecting the Buffered button will not add the command to the command list.

For more information, see **Send a Buffered Command** on page H-25.

Response field

Returns a response to an immediate or buffered command.

The response will become gray after 15 seconds if no response is registered.

The response to a successfully completed buffered command is “ok”.

Refer to the user’s guide for the Gilson instrument for a description of the valid response to the immediate commands.

The response to an unsuccessfully completed immediate or buffered command is “#error”.

To send a command line

Double-click on the Unit, Type, Command, Response, or Comment field to send the immediate or buffered command for that specific command line.

Command line column headings

Repeat

A green check mark (✓) in the Repeat column means that an immediate command will automatically repeat when the Auto Repeat option is checked. Double-click on the Repeat field to select or deselect the Auto Repeat for that command line.

A yellow check mark (✓) in the Repeat column means that a buffered command will automatically repeat when the Auto Repeat option is checked. Double-click on the Repeat field to select or deselect the Auto Repeat option for that command line.

Unit

This is the Unit ID for the instrument in the command line.

Type

I - Immediate Command, B - Buffered Command

Command

This is the GSIOC command for the command line.

Response

This is the GSIOC response when the command line is initiated with a double-click on the Unit, Type, Command, Response, or Comment field. The response will become gray after 15 seconds if no response is registered.

Comment

This is an optional comment that can be added to the command line.

Advanced Mode Menus

File Menu

There are four options in the File menu: Open, Save, Save As..., and Exit.

Open

The Open option in the File menu allows you to open previously created command lists (GSUTIL32 files). The extension for a GSUTIL32 file is .GSU.

Save

The save option in the File menu allows you to save the Advanced commands to GSUTIL32.GSU. The GSUTIL32.GSU file is automatically created in the location where GSUTIL32.EXE is stored.

The Advanced commands will automatically be saved to GSUTIL32.GSU if the Gilson GSIOC Utility is exited without saving.

The GSUTIL32. GSU is automatically opened when the Advanced mode is selected from the Mode menu.

Save As...

The Save As... option on the File menu allows you to save the Gilson GSIOC Utility commands that are currently defined. The file's name and path must be specified.

Exit

Closes the Gilson GSIOC Utility software.

Edit Menu

There are four options in the Edit Menu: Insert Immediate, Insert Buffered, Selection, and Font....

Insert Immediate

The Insert Immediate option in the Edit menu allows you to insert an immediate command in the command list. The new command will be added to the last line in the command list.

The GSIOC Command will not be inserted if there is already a command line in the list with the same Unit ID and Command.

For more information, see **Insert an Immediate Command** on page H-22.

Insert Buffered

The Insert Buffered option in the Edit menu allows you to insert a buffered command in the command list. The new command will be added to the last line in the command list.

The GSIOC Command will not be inserted if there is already a command line in the list with the same Unit ID and Command.

For more information, see **Insert a Buffered Command** on page H-23.

Selection

Delete (Ctrl + D)

Deletes the highlighted command from the command list.

Up (Ctrl + U)

Moves the highlighted command up in the command list.

Down (Ctrl + D)

Moves the highlighted command down in the command list.

Execute (Ctrl + E)

Executes the highlighted command.

Repeat (Ctrl + R)

Adds or removes the repeat option for the highlighted command.

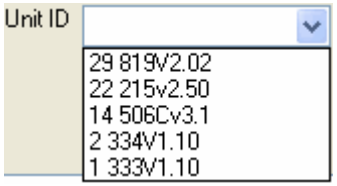
Font...

The Font... option on the Edit menu allows you to change the font options for the command list fields and headers, as well as the Unit ID, Comment, and Command text boxes.

Mode Menu

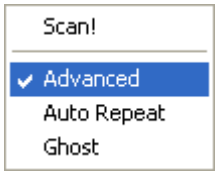
There are four options in the Mode menu: Scan!, Advanced, Auto Repeat, and Ghost.

Scan!



The Scan! option on the Mode menu allows you to scan for GSIOC instruments. After a scan, the Unit ID list box displays the unit IDs and the version of the connected instruments. If any connected instruments are missing from the list, ensure that the proper RS-232 or GSIOC connection exists between the computer and the instruments, and that the instruments do not have duplicate Unit ID numbers.

Advanced



The advanced option in the Mode menu allows you to switch between the Basic and Advanced modes. A check mark means that the GSIOC Utility is in Advanced mode.

Auto Repeat

The Auto Repeat option on the Mode menu allows you to repeat command lines that appear in the command list.

A command line will only repeat if a check mark appears in the Repeat field. A check mark can be added by double-clicking on the Repeat field and selecting the Auto Repeat check box.

Starting from the top command line, this mode will refresh one repeating command line every 1/10th of a second. For example, if there are ten command lines with Repeat selected, each of these command lines will be initiated every second.

Auto Repeat mode is useful for monitoring the instrument using immediate commands and is designated in the Repeat field with a green check mark.

Auto Repeat mode is not intended to be used as a programming tool with buffered commands. Repeating buffered commands will be executed at a fixed time interval regardless if a command has finished. For this reason, the check mark in the buffered command line is yellow.

Auto Repeat mode can be selected from the Mode menu or by selecting the check box next to Auto Repeat.

Auto Repeat is deselected by default with the Advanced mode is first opened. When Gilson GSIOC Utility - Advanced is saved or closed, the status of Auto Repeat is saved.

Ghost

The Ghost option in the Mode menu makes the GSIOC Utility window transparent (and always on top). This allows you to view another window behind the Utility. The Utility will remain fully functional in the Ghost mode.

Help Menu

Help Topics

When selected, the Help window for the Gilson GSIOC Utility appears.

About

When selected, the About window appears.

This window displays the version of the Gilson GSIOC Utility, the GSIOC32.DLL, and the GSIOC Server or Driver; and the Port, IRQ, and Baud set by the GSIOC Configuration Editor.

Commands

Immediate Command

Immediate commands request status information from an instrument. These commands are executed immediately, temporarily interrupting any command in progress. Each command is a string of no more than 40 characters.

You can find a list of valid immediate commands for each instrument in its user's guide.

Buffered Command

Buffered commands send instructions to an instrument. These commands are executed one at a time. Each command is a string of no more than 40 characters.

You can find a list of valid buffered commands for each instrument in its user's guide.

Insert an Immediate Command

There are two ways to insert an immediate command in Advanced mode.

Using the Edit menu

1 From the Unit ID drop-down box, select the unit ID of the instrument to send the command to.

2 Type a Command and Comment. (The comment is optional.)

3 Select Insert Immediate from the Edit menu. The new command will be inserted at the bottom of the command list.

Note: The command will not be inserted if there is already a command line in the list with the same Unit ID and command.

Using the + button

1 From the Unit ID drop-down box, select the unit ID of the instrument to send the command to.

2 Type a Command and Comment. (The comment is optional.)

3 Click the + button next to the Immediate button. The new command will be inserted at the bottom of the command list.

Note: The command will not be inserted if there is already a command line in the list with the same Unit ID and command.

Insert a Buffered Command

There are two ways to insert a buffered command in Advanced mode.

Using the Edit menu

1 From the Unit ID drop-down box, select the unit ID of the instrument to send the command to.

2 Type a Command and Comment. (The comment is optional.)

3 Select Insert Immediate from the Edit menu. The new command will be inserted at the bottom of the command list.

Note: The command will not be inserted if there is already a command line in the list with the same Unit ID and command.

Using the + button

1 From the Unit ID drop-down box, select the unit ID of the instrument to send the command to.

2 Type a Command and Comment. (The comment is optional.)

3 Click the + button next to the Buffered button. The new command will be inserted at the bottom of the command list.

Note: The command will not be inserted if there is already a command line in the list with the same Unit ID and command.

Send an Immediate Command

Basic Mode

1 From the Unit ID drop-down box, select the unit ID of the instrument to send the command to.

2 Type (or select) a Command.

3 Click Immediate.

Advanced Mode

Using the Immediate button

1 From the Unit ID drop-down box, select the unit ID of the instrument to send the command to.

2 Type a Command and Comment. (The comment is optional.)

3 Click Immediate.

Using Execute from the Edit menu

1 Highlight the command to be sent in the command list.

2 Choose Selection from the Edit menu and select Execute. (Or, type Ctrl + E.)

Using the command list

Double-click on the command line of the command you want to send.

Send a Buffered Command

Basic Mode

1 From the Unit ID drop-down box, select the unit ID of the instrument to send the command to.

2 Type (or select) a Command.

3 Click Buffered.

Advanced Mode

Using the Buffered button

1 From the Unit ID drop-down box, select the unit ID of the instrument to send the command to.

2 Type a Command and Comment. (The comment is optional.)

3 Click Buffered.

Using Execute from the Edit menu

1 Highlight the command to be sent in the command list.

2 Choose Selection from the Edit menu and select Execute. (Or, type Ctrl + E.)

Using the command list

Double-click on the command line of the command you want to send.